Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
PRINTING
FINISHING

MAY 10, 1939
VOLUME 28, No. 14

AMERICAN DYESTUFF REPORTER

RECEIVED
JUL 17 1939
U. S. Department of Agriculture

New EXCITING! New

The World has become so accustomed to the unusual in industry that only the most exceptional products cause excitement. Selling force and dyers alike who look over Geigy Leaflet 306-D are sure to be enthusiastic about the results obtained on Woolens and Worsteds with the new Geigy

Erio Chrome Blue 2 G L -

a Blue which finds its greatest usefulness as a grey or saddening agent when extreme fastness to light is required.

They will be impressed by its stability under artificial light—by its extreme fastness to light, even in delicate shades. Moreover, makers of Men's wear cannot overlook the effectiveness of Erio Chrome Blue 2 G L on Silk White piece goods.

Further interesting detail will be found in Leaflet 306-D.

GEIGY COMPANY INC.

89-91 BARCLAY STREET NEW YORK—NEW YORK

Sole Selling Agents in United States and Canada for J. R. Geigy, S.A. Basle, Switzerland

In Great Britain The Geigy Colour Co., Ltd. National Buildings Parsonage, Manchester

DYESTUFF MAKERS GEIGY EST. 1764

Boston Providence Cincinnati Philadelphia Charlotte
Toronto Portland, Ore.

OFFICIAL PUBLICATION
of the
PROCEEDINGS
AMERICAN ASSOCIATION
OF TEXTILE CHEMISTS
AND COLORISTS

VERSATILITY

IN WETTING...DISPERSING...EMULSIFYING

WITH DECERESOL OT

One of the bays in the Pure Research Division at the Stamford Research Laboratories of American Cyanamid Company, where experimental activity is constantly endeavoring to broaden the usefullness of chemicals.

In addition to surpassing, in wetting, dispersing and emulsifying properties, all other products of this type heretofore developed, DECERESOL* OT is one of the most versatile wetting agents available to the textile industry. Below are listed just a few of the applications where it is now being used with efficiency and economy.

Wetting out gray cotton piece goods prior to peroxide bleaching.

Wetting out gray cotton piece goods on a mangle, making same instantaneously and uniformly absorbent prior to gray sanforizing.

The preparation of raw stock cotton, yarn, and cotton piece goods prior to dyeing with all types of colors.

An admixture to printing paste to give thorough penetration, greater color value, and increased fastness to soaping, especially on cotton piece goods printed direct from the bale.

The treatment of cotton piece goods and the addition to starch pastes on absorbent finishes.

In "brown souring" for obtaining better penetration of the acid and greater solubility of calcium and magnesium salts.

In the desizing bath with enzymes to insure penetration of the fabric.

*Registered U. S. Patent Office

AMERICAN CYANAMID & CHEMICAL CORPORATION

30 ROCKEFELLER PLAZA • NEW YORK, N. Y.

DISTRICT OFFICES: 89 Broad Street, Boston, Mass.; 600 S. Delaware Avenue, Philadelphia, Pa.; Russell & Bayard Streets, Baltimore, Md.; 822 W. Morehead Street, Charlotte, N. C.; 860 Leader Building, Cleveland, Ohio; 20 N. Wacker Drive, Chicago, Ill.; 2006 Race Street, Kalamazoo, Mich.

American Dyestuff Reporter, Vol. 28, No. 14, July 10, 1939. Published every other Monday. Copyright, 1939, by Howes Publishing Co., 440 4th Ave., New York, N. Y. Domestic subscription, $5.00; Canadian, $6.00; Foreign, $6.00. Entered as second-class matter, Nov. 6, 1919, at the New York, N. Y. Post Office, under the act of March 3, 1879.

AMERICAN DYESTUFF REPORTER

A. P. HOWES
Publisher

LOUIS A. OLNEY
Directing Editor

NORMAN A. JOHNSON
Managing Editor

MYRON D. REESER
Advertising Manager

Official Publication of the Proceedings of the American Association of Textile Chemists and Colorists.

JULY 10, 1939

VOLUME 28 NUMBER 14

American Dyestuff Reporter, Vol. 28, No. 14, July 10, 1939. Published every other Monday. Copyright, 1939, by Howes Publishing Co., 440 4th Ave., New York, N. Y. Domestic subscription, $5.00, Canadian, $6.00, Foreign, $6.00. Entered as second-class matter, Nov. 6, 1919, at the New York, N. Y., Post Office, under the act of March 3, 1879.

Contents

Contents of previous issues can be found by consulting the Industrial Arts Index at your library

• Special Articles

Titer Test 355
Henry Barker Burke

Physical and Chemical Textile Testing—XV..... 357
John H. Skinkle

When Rayon Was Artificial Silk..... 375
Noel D. White

• Departments

Trade Notes—New Products..... 378

• Proceedings of the American Association of Textile Chemists and Colorists

Meeting, New York Section..... P359

Outing, Northern New England Section..... P359

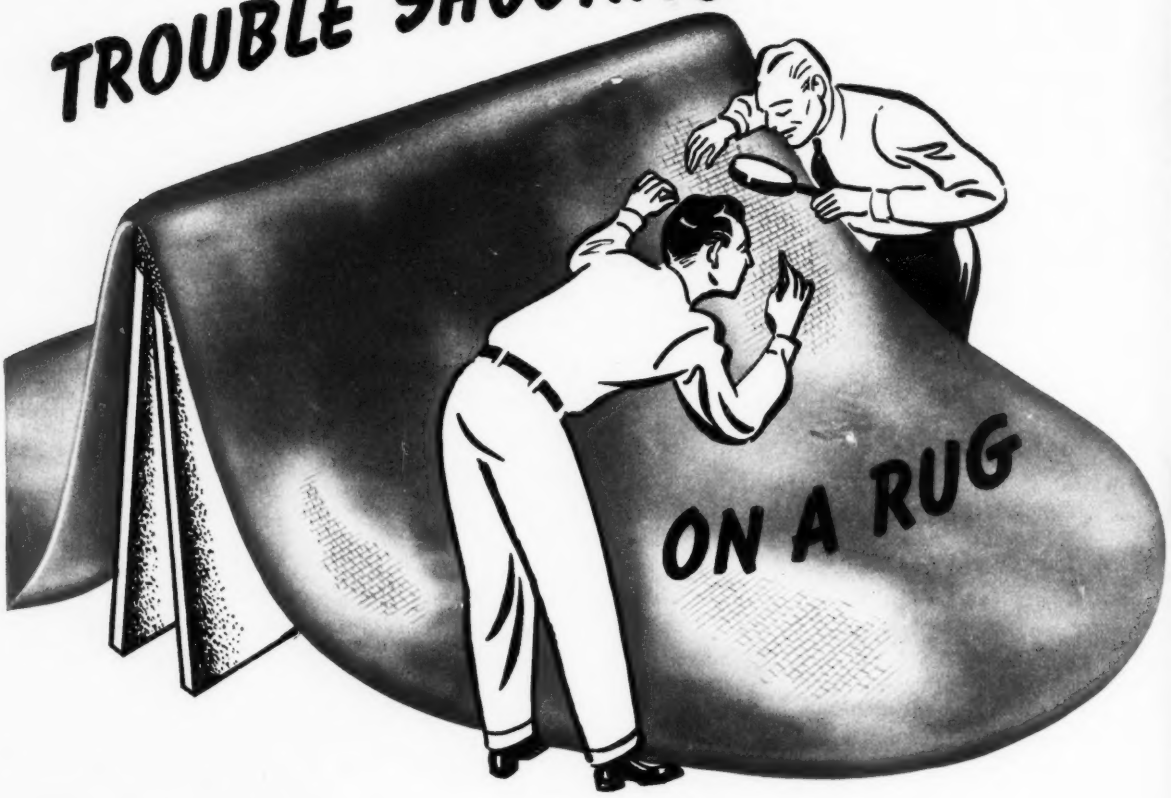
Labeling of Consumer Textile Goods..... P361
Charles L. Simon

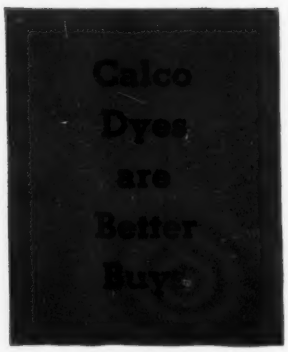
Outing, Philadelphia Section..... P369

Report, Lowell Textile Institute Student Section..... P369

Copyright, 1939, Howes Publishing Co., Inc.

TROUBLE SHOOTING ON A RUG





The rug one of our customers made to order for a large hotel was a thing of beauty—but a joy for only a short time. Unaccountably, the back cracked, releasing the pile in three distinct spots—and led to a demand for money-back from the hotel owner.

The rug maker asked us, who make dyes, if we could tell why trouble developed in certain spots. Our test tubes showed a strong alkali concentration at each point of failure. At the hotel, we found a door located at each bare spot. When the doors were washed, soapy water inevitably dripped on the rug. The hotel man agreed that this, through no fault of the maker, had caused the trouble.

For this helpful bit of sleuthing the rug maker was naturally grateful. So was the hotel man. Because one more hidden source of overhead had been uncovered, and could be guarded against in the future.

Naturally, trouble-shooting jobs like this come our way infrequently. But our ability to help in such cases is important to you. It shows that we at Calco have a practical knowledge of dyes, chemicals and related problems that makes Calco Dyes do a better-than-average job in your hands. This is one very practical reason why "Calco Dyes are Better Buys."

For Color in Textiles

THE CALCO CHEMICAL COMPANY, INC.
BOUND BROOK NEW JERSEY

Boston • Philadelphia • Providence • New York • Charlotte
Chicago • Paterson • A Division of American Cyanamid Co.

AMERICAN
DYESTUFF REPORTER

VOLUME 28 July 10, 1939 NUMBER 14

Titer Test

An Explanation of the Test—Its Purpose—Together With Explanatory Comments Upon its Value From a Practical Consideration

HENRY BARKER BURKE

(All rights reserved by the author)

OF the several constants or values usually determined in the routine analysis of oils and fats or any of their commercial combinations (physical or chemical), and in particular soaps, the constant most frequently referred to and utilized in everyday business as a means of appraising the value and effectiveness of these products is the Titer Value.

It is perhaps impossible to accurately account for the wide general acceptance of the titer value as so nearly final data in the evaluation of an oil or soap product. But, this value is repeatedly emphasized in offering such products for sale and as often as fully acknowledged by the prospective purchaser.

The test originated in England and was for many years employed as a rough-and-ready means of evaluating soap and candle stock. The entire fatty product was subject to the test. The higher the "titre" the more valuable the product to the soap-maker, because it was possible to make a harder soap with less of this stock. And, to the candle-maker it had a similar value as it indicated a greater yield of stearine for his candles, that is, the mixed fatty acids of high melting point. (Do not confuse this with the glyceride of stearic acid which is known as stearin and is spelled without the "e".) The titer test as now carried out is on the fatty acids from this fatty material. So the test at that time was in reality a popular commercial test to approximate the stearine content of an oily or fatty product.

Today, no doubt, its general commercial use is based upon a somewhat similar consideration. That is, a popular commercial means of expressing the solidification point of fatty oils or their products. And, thereby, visualizing the approximate percentage of the liquid fatty constituents in a given combination.

As our knowledge of chemistry increased and the underlying principles upon which this test was based were better understood, the test itself was formulated into a standardized procedure. The results from this test (titer value) when compared to titer values of definitely known products becomes of importance in routine analysis as one of several values, (such as iodine value) useful in identifying and evaluating products containing oils or fats.

Fats, paraffins and similar bodies do not have a definitely characterized melting point. That is, they have no sharp, easily determined melting point. Frequently, however, use can be made of the solidification points of these bodies, and more particularly of their fatty acids as a means of evaluating their practical worth.

The solidification point of the fatty acids obtained from any fat or oil is known as the Titer Value of that substance. (Do not confuse this term with titration, a wholly different technical manipulation.) This value is usually reported in degrees Centigrade as the Titer Number; (in England it is very often reported in Fahrenheit degrees as the Tate Number).

This solidification point is the temperature at which a cooling mass (in this case fatty acids), will remain for some time unchanged in temperature. The explanation of this is that the total latent heat set free by the change from a liquid to a solid phase is concentrated for a brief interval of time at a given point. This recorded maximum temperature in degrees Centigrade is the Titer Number so frequently referred to in business transactions relative to merchandise with a fatty oil component.

It is well established that the melting point of a fat (or mixed fatty acids obtained from it), increase with the molecular weight in those acids of the Saturated Series. That is, the Acetic or Stearic Series. For illustration; Butter (principal component Butyric Acid—C_3H_7COOH) melts at minus 6.5 C. —(20.3 F.). Tallow (principal component Stearic Acid —$C_{17}H_{35}COOH$) melts at 69.3 C. —(156.7 F.).

Likewise, in mixtures of acids (or their glycerides), of the Saturated and Unsaturated Series the melting point lowers in proportion to the unsaturated body present. That is, the Acrylic or Oleic Series, the Linolic Series, the Linolenic Series, the Fatty Acids with 8 or more unsaturated bonds, and the hydroxy acids like Ricinoleic Acid of Castor Oil, as well as other acids formed by the

oxidation of unsaturated fatty acids have definitely low melting points. Oleic Acid, for example, melts at 14 C —(57.2 F.), while Ricinoleic Acid melts nearly as low at 16 —17 C. —(60.8 — 62.6 F.).

So when we have a mutton tallow which is particularly rich in stearin (the hard tallows having upward to 80 per cent stearin, the balance being essentially olein), we can expect a much higher Titer Number than with a lard which holds around 60 per cent olein with 35 per cent stearin plus a small amount of palmitin, a similarly high melting fatty glyceride.

From these facts it is evident that the melting point (titer value), while either may be indicative of the other, are not comparable to one another and differ widely.

There are three conditions prevailing in the derivation of this temperature or number. The following illustrated description will acquaint the reader with these varying conditions.

Condition No. 1

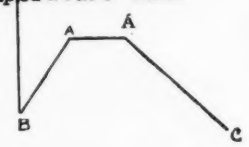
Temperature Line

The temperature drops abruptly to point B. Recovers rapidly to an apex at point A. And, then drops again abruptly to point C.

Point A is the Titer Value.

Condition No. 2

Temperature Line



Here the temperature drops abruptly to point B. Recovers to point A and levels off to point Á for a time and finally drops off to point C.

Point A to Á is the Titer Value.

Condition No. 3

Temperature Line

In this case the temperature drops abruptly as in the other instances and recovers to a peak at A which almost imperceptibly inclines to a low point at Á from which it drops off to C.

Point A is the actual Titer Value.

Many of our readers will have had through chemical training or experience an exact knowledge of the procedure used in determining the Titer Number. For the benefit of others, we describe the general scheme of procedure without going into complete analytical detail.*

1. Mix and average the sample.
2. Take 75 grams of the sample. Melt it. Saponify it with caustic soda and use water or alcohol to effect a solution.
3. After obtaining a complete solution boil the liquid off to complete dryness.
4. Take up or redissolve this dried residue (soap) in boiling water.
5. Add sulfuric acid to set free the fatty acids and boil until the liquid is clear.
6. Wash with boiling water until the fats are free of mineral acids.
7. Collect the Fatty Acids and cool to 15 to 20 degrees Centigrade above the solidification point of these acids.
8. Transfer these liquid (melted if necessary) Fatty Acids to the Titer Tube in which is suspended a thermometer which is also used as a stirrer.
9. Check the temperature rise, and the highest point in that rise is recorded as the Titer Number or Value of the Fatty Acids.

Please note that we do not test the solidification of the oil or fat or any of its combinations, but deliberately prepare the Fatty Acids from the product under examination. This Fatty Acid is tested for its solidification point (there may be and most generally are mixed acids present), under the scheme of analysis described. The Titer Number or Value is the maximum temperature reached as these Fatty Acids "set" and not the temperature at the time they "set."

The apparatus in which this is carried out in this country consists of a titer tube or open glass tube of about 1 inch in diameter by about 4 inches in length. This tube is placed in a salt-mouth bottle of approximately 3 inch diameter by 6 inches in height. The tube is held upright by being inserted through a well fitted perforated stopper. The titer tube is filled ½ full of the Fatty Acids under examination. A thermometer graduated in 1/10 degrees is suspended in the center of the Fatty Acids, and is used also as a stirring rod. The cooling is accomplished by the air space surrounding the tube. The following illustration will more clearly present the detail of this apparatus.

To be of value the test must be carried out with greatest measure of standardization possible and the utmost exercise of caution as to each small detail. This is equally true whether the test is being made for comparative purposes against one's own products or to check some stated specification. The lack of standardization in procedure, in apparatus and in the detail of carrying out the test is why the Titer Value in general is such a "casual figure."

While adopted as a popular means by which to evaluate oily and fatty substances, the Titer Test is markedly influenced by several factors anyone of which will effect the reliability of the results. The most apparent of these influencing factors are:

1. to be of any value at all, COMPLETE saponification of the saponifiable matter must be effected.
2. the titer must be taken at 20 C. (68 F.) for all fats with titer values above 30 C. (86 F.), and for all other fats at 10 C. (50 F.).

*For those wishing more complete detail as to analytical procedure please see Official & Provisional Methods of Analysis, Association of Official Agricultural Chemists, Bulletin 107, Bureau Chemistry, U. S. Dept. of Agriculture, Washington, D. C. Or. Oil Analysis, Augustus H. Gill.

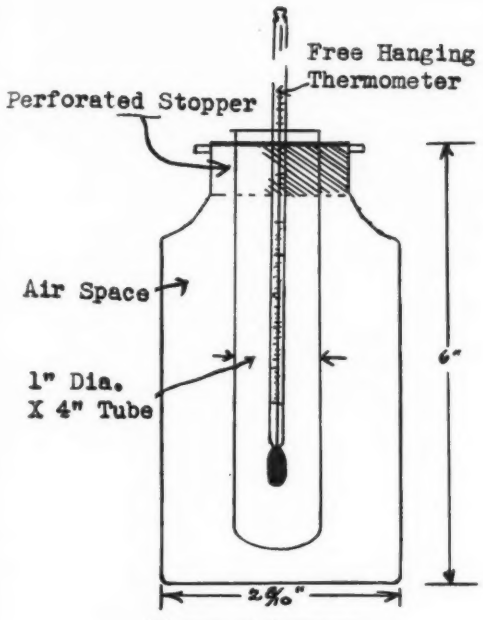


Diagram of Apparatus

3. in melting these fats any temperature above 21 C. (70 F.) must be avoided.
4. direct flame cannot be used to melt these fats as excessive localized heating will result.
5. the product must be ABSOLUTELY FREE of all water and alkali.
6. reliable tests, strictly speaking, can be carried out only above 26 C. (78 F.), because in samples of lower value almost any figure can be obtained if one knows when to stir or to shake the congealing fatty mass.

In general, the titer numbers ascribed to commonly meet with mill soaps are somewhat as follows:

Tallow Base	38-44 C.	(100.4—111.2 F.)
Olive Oil Base	20-23 C.	(68. — 73.4 F.)
Red Oil Base	17-18 C.	(62.6— 64.4 F.)

The solidification points of some of the more commonly used fats or fatty oils are:

Tallow	33-48 C.	(91.4—118.4 F.)
Lard	27-44 C.	(80.6—111.2 F.)
Palm	20-38 C.	(68. —100.4 F.)
Cocoanut	16-18 C.	(60.8— 64.4 F.)
Olive minus	6- 4 C.	(21.2— 39.2 F.)

It is apparent that with variances so wide as these (anywhere from 40 to 90 per cent above lowest values) that the test by itself is of problematical value in any case except as an index to the relative proportion of solid to fatty acid content of a product, and as a corroborative check upon other and more exact and dependable analytical values, especially the Iodine Absorption Value and the Saponification Value.

While this value by itself (Titer Value) may serve to classify certain favorable types of product to the buyer, it should be kept distinctly in mind that by itself alone it does not identify the components of such combinations nor act to evaluate the economy of their use. And, as important an adjunct as this test is to routine laboratory analysis it should never be cited or considered as a criterion to the value of fatty oil combinations.

Physical and Chemical Textile Testing—XV

JOHN H. SKINKLE*

PART II—CHEMICAL TESTING

(Continued from June 12, 1939 issue)

Chapter 14—Damage to Wool

INTRODUCTION

IN the case of wool, we have a fiber which is much more complex than cellulose and about whose structure and chemical reactions we know much less than we do in the case of cellulose. A complete hydrolysis of wool shows that it is a protein composed of a large number of amino acids of which the principal ones are given in Figure 61. These and other amino acids are combined in long chains by peptide linkages and these chains are thought to be folded in some such manner as is shown in Figure 62a. These folded chains are further thought to be connected by side chains with a salt linkage (Figure 62b) and with a cystine linkage (Figure 62c); of these side chains, the cystine linkage seems to be the most important.

In cases of chemical attack on the wool, the points affected seem to be the peptide linkage, the disulfide linkage, and the amino groups; the disulfide linkage is apparently the most sensitive to chemical attack.

The types of chemical treatment to which wool is exposed and which may cause damage are:

1. Acids—carbonizing, dyeing.
2. Alkalies—scouring, filling, laundering.
3. Hot water or steam—crabbing, drying.
4. Reducing agents—reduction bleach.
5. Oxidizing agents—peroxide bleach.
6. Chlorination or bromination—non-shrinkage processes.
7. Light—on the sheep, in service.
8. Dry heat—drying, pressing.

*Lowell Textile Institute.

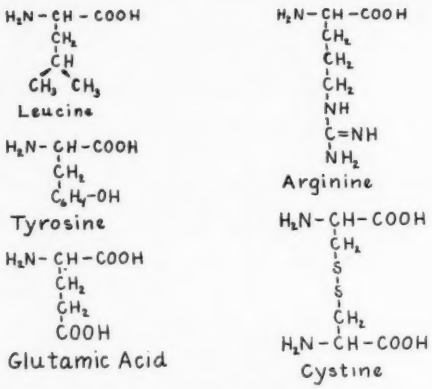


Fig. 61—Principal Amino Acids in Wool.

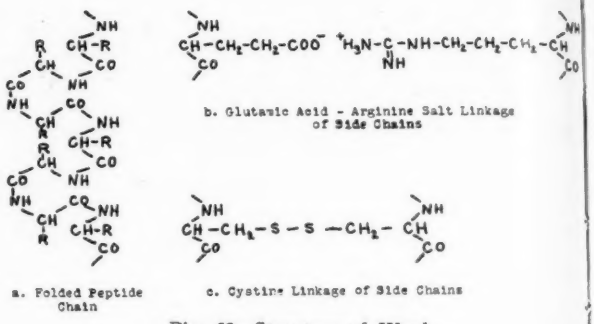


Fig. 62—Structure of Wool.

The damage may manifest itself as uneven dyeing, tendering, harshness, or as an abnormal susceptibility to some process which normally would not affect the wool seriously, such as finishing operations or laundering. The problem is complicated by the fact that practically all wools are somewhat damaged by light and alkali when they are sheared from the sheep; by the fact that the damage very often does not show up until after dyeing, so that color tests cannot be used; and by the fact that damage may occur in a process with practically no change in strength or handle until some other process is given the wool, for example, alkali damage may occur which does not show up until after an acid treatment (as in dyeing) or oxidation damage may occur but not show up until after an alkaline treatment (as in scouring or laundering).

The tests which have been used in determining the presence and the amount of damage are as follows:

1. Physical properties
   a. Strength
   b. Stretch

These have already been discussed; they require large areas of damage and also require an undamaged sample for reference.

2. Microscopical examination
   a. Appearance
   b. Action with swelling agents

These are probably the best methods of test; they will be considered in a later chapter.

3. Dyeing or staining tests
   a. Benzopurpurin 10B
   b. Indigo Carmine
   c. Kiton Red G

These are not, of course, suitable for use on dyed samples.

   d. Methylene Blue

This test may be used on dyed samples and may be made quantitative. The test is complicated and requires special apparatus.

4. Chemical color reactions
   a. Stannous chloride test

The author has not found this successful.

   b. Lead acetate test
   c. Thiocyanate test

These are tests for bleached wool and are useful in such cases; they are, of course, not applicable to dyed wool.

   d. Pauly test

This is the best of the color tests and may be made quantitative if desired; it is not applicable to dyed wool.

5. Chemical content tests
   a. Sulfur content
   b. Total nitrogen content

These tests require very precise analytical work since only a small difference is shown. An undamaged sample of the same wool is also required as a control.

   c. Amino nitrogen

This requires elaborate, special apparatus and the results are not very reliable.

   d. Ammonia nitrogen

This is a quite satisfactory determination for certain types of damage which have not had any alkaline treatments subsequent to damage.

6. Solubility tests
   a. Soluble nitrogen

This requires a long time to obtain the results and two Kjeldahl determinations are necessary.

   b. Solubility in dilute sodium hydroxide.

This is probably the simplest and best chemical test where the sample has not had an alkaline treatment after damage.

In view of the above advantages and disadvantages, we will consider in detail only the following:

1. Qualitative tests
   a. Lead acetate test
   b. Thiocyanate test
   c. Pauly test (may also be quantitative)
2. Quantitative tests
   a. Methylene Blue test
   b. Sulfur content
   c. Total nitrogen content
   d. Soluble nitrogen
   e. Ammonia nitrogen
   f. Solubility in dilute sodium hydroxide

(Continued on page 371)

PROCEEDINGS OF THE

American Association of Textile Chemists and Colorists

July 10, 1939

Officers of the Association

ALBAN EAVENSON, *President*
Eavenson & Levering Co., Camden, N. J.
DUNCAN FERGUSON—ARTHUR R. THOMPSON, JR., *Vice-Presidents*
WILLIAM R. MOORHOUSE, *Treasurer*
National Aniline & Chemical Co., Boston, Mass.
HAROLD C. CHAPIN, *Secretary*
Lowell Textile Institute, Lowell, Mass.
LOUIS A. OLNEY
President Emeritus and Chairman of the Research Committee
Lowell Textile Institute, Lowell, Mass.

Councilors Representing Sections

FREDERIC A. PRISLEY; PETER J. ARIENTE (Rhode Island)
HERBERT S. TRAVIS; CHARLES A. SEIBERT (Philadelphia)
HENRY F. HERRMANN; GEORGE L. BAXTER; HAROLD W. STIEGLER, (New York)
KENNETH H. BARNARD; WALTER M. SCOTT (N. New England)
RAPHAEL E. RUPP; THOMAS R. SMITH (Piedmont)
P. N. COLLIER (South Eastern) B. C. BLOWNEY (Midwest)
HOMER WHELCHEL (South Central)

Local Sections and Their Officers

Northern New England Section
Clarence L. Nutting, Chairman, Arlington Mills, Lawrence, Mass.
John N. Dalton, Secretary, Pacific Mills, Worsted Division, Lawrence, Mass.

Rhode Island Section
Allison R. Fletcher, Chairman, Franklin Process Co., Providence, R. I.
Louis D. Fleming, Secretary, Woodlawn Finishng Co., Pawtucket, R. I.

New York Section
Louis S. Zisman, Chairman, Gotham Silk Hosiery Co.
33rd St. and 1st Ave., New York, N. Y.
P. J. Kennedy, Secretary, E. I. duPont de Nemours & Co., Inc.
61 Thomas St., New York, N. Y.

Philadelphia Section
William Ebersold, Chairman, 1512 Sheridan Lane, Norristown, Pa.
James P. Conaway, Secretary, 5947 Belden St., Frankford, Philadelphia, Pa.

Piedmont Section
A. Henry Gaede, Chairman, Laurel Soap Mfg. Co., Charlotte, N. C.
J. W. Ivey, Secretary, Mathieson Alkali Works, Inc., Charlotte, N. C.

South Central Section
Nestor Groteluеschen, Chairman, Magnet Mills, Clinton, Tenn.
W. S. McNab, Secretary, Quaker City Chemical Co., Knoxville, Tenn.

Midwest Section
Herman Boxser, Chairman, Western Felt Works, 4115 Ogden Ave., Chicago, Ill.
David Anderson, Secretary, Nyanza Color & Chemical Co.,
549 West Randolph St., Chicago, Ill.

South-Eastern Section
Robert W. Philip, Chairman, Editor, "Cotton," Atlanta, Ga.
W. Fred Crayton, Secretary, E. I. duPont de Nemours & Co., Inc., Columbus, Ga.

Lowell Textile Institute Student Section
Vernon W. Colby, Chairman; Neil Manning, Secretary

North Carolina State College Student Section
W. L. Carter, Chairman; Seymour Schandler, Secretary.

Philadelphia Textile School Student Section
Bernard Menin, Chairman; Ruth Chartener, Secretary

Members should notify the **Secretary** immediately of all address changes

MEETING, NEW YORK SECTION

Place: Swiss Chalet, Rochelle Park, N. J.

Date: May 19th, 1939.

Speaker: Dr. Jerome Alexander, Consulting Chemist.

Subject: "Hand in Textiles and Its Relation to Underlying Structure."

Dr. Joseph F. X. Harold, Chairman of the Nominating Committee for officers of the New York Section, proposed the following names for the coming year:

Chairman—Mr. Louis S. Zisman.

Vice-Chairman—Dr. J. E. Meili.

Secretary—Mr. P. J. Kennedy.

Treasurer—Mr. John J. Sokolinski.

Councilors for 1940—Mr. Henry F. Herrmann, Dr. Harold W. Stiegler, Mr. George L. Baxter.

A motion was proposed and seconded that the Secretary cast one ballot electing these officers for the coming year.

There was a complete discussion regarding the outing of the New York Section to be held at the North Jersey Country Club on June 16th.

Our Chairman called attention to the annual meeting to be held in Boston on Friday and Saturday, September 15th and 16th. Details were furnished through a letter from Mr. W. H. Zillessen.

Total attendance: Sixty-five (65).

Respectfully submitted,

P. J. KENNEDY, *Secretary.*

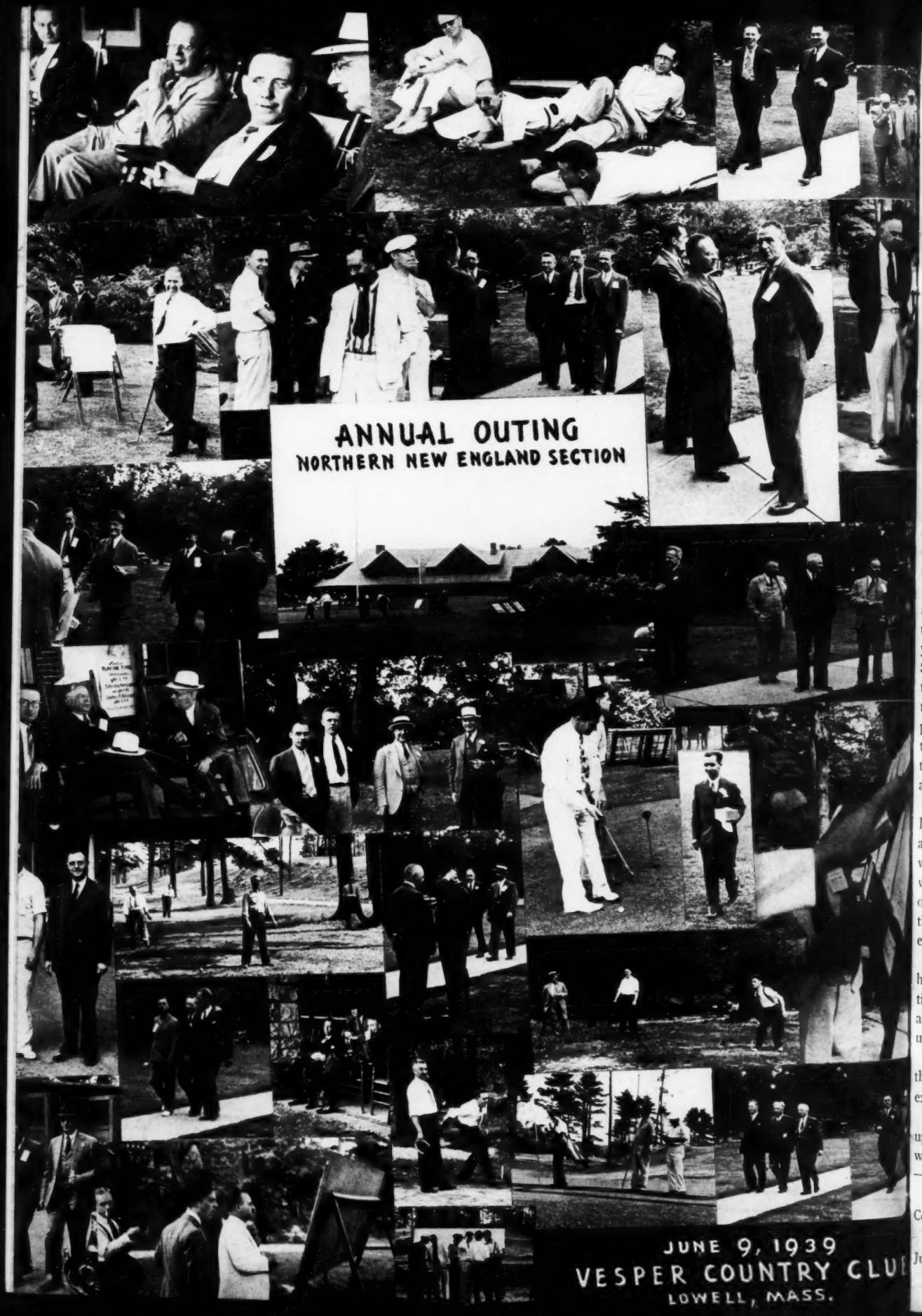
OUTING, NORTHERN NEW ENGLAND SECTION

THE seventeenth annual outing of the Northern New England Section was held on Friday, June 9, 1939, at the Vesper Country Club, Lowell, Massachusetts.

Mr. H. P. Selya was Chairman of the Outing Committee, and under his direction this Section enjoyed one of our best outings. About one hundred and fifty members and guests were present at the dinner which followed the completion of the sports program. The Section is much indebted to the many dyestuff and chemical concerns who contributed prizes for the various sports and door prizes.

Respectfully submitted,

JOHN N. DALTON, *Secretary.*


ANNUAL OUTING
NORTHERN NEW ENGLAND SECTION
JUNE 9, 1939
VESPER COUNTRY CLUB
LOWELL, MASS.

Labeling of Consumer Textile Goods*

CHARLES L. SIMON**

A GREAT many labels on merchandise we receive, state "Guaranteed for color fastness," "Guaranteed against shrinkage," guaranteed for everything in God's world that you can think of. But when we examine the merchandise in the laboratory from the consumer point of view, we very frequently find it does not live up to the label. A general blanket O.K. if given on an entire line of merchandise is an extremely difficult thing to live up to.

What I would like to do is to consider the labeling question from three points of view (1) from the social point of view, (2) from the commercial point of view, and (3) from the technical point of view. I could talk on any one of those three points until three o'clock tomorrow morning.

Let me first take up the social aspect of labeling. We should realize that about fifty per cent of the family units in the United States have incomes under $1500 a year and about seventy-five per cent have incomes under $2500 a year, which makes it absolutely essential, from the point of view of getting their money's worth, that these people who make up the large proportion of our population get exactly what they pay for. In other words, they can't afford to pay money, expecting to get something that will wear, that will wash, and that won't shrink, and get something which does none of these things.

I think everyone in this room will agree with me when I say: "There is no one here, whether he is a dyer, or a finisher, a salesman of dyestuff or finishing materials, who doesn't buy or sell technical products. I don't care whether it is a knitting machine, a dyestuff, a finishing oil, or a barrel which is involved. When he buys something he expects to get exactly what he pays for, and he expects to be able to buy it on the basis of specifications."

When a dyestuff salesman sells a dyestuff to a dyehouse, they buy it on color value, on exhausting properties, etc. They expect to get exactly what they pay for, and they are entitled to know what to expect of the product before they purchase it.

When B. D. A. dye and finish a piece of rayon lining they do so on a competitive basis, and their customer knows exactly what he is getting and for what he pays.

Today the sins of the fathers are visited not only upon the children but on the fathers themselves, because what happens is this: If we sell an inferior dyestuff, let us say, we get it back in poorly dyed shirts tomorrow. If we sell an inferior rayon taffeta bedspread, our wives buy it over the counter and it looks mighty sick in six months. So we are not only on the selling end, but we are on the buying end, and everyone of us in this room must realize that everything we are wearing, everything that goes into our homes, everything that our children are wearing, all the decorative fabrics throughout the house, sheets, pillow cases, draperies, table cloths, and the rest, come under our control. We are not only interested in producing those fabrics, but we are buying them back the next day. Consequently we are vitally interested in this question from two points of view—from the selling end and from the buying end.

Let us consider the question of department store merchandise, because, after all, an enormous amount of the products we sell, an enormous amount of the products we buy, are bound up in the department store.

Actually the question of labeling affects the manufacturer, the department store buyer, the sales people, the advertising people, and of course the ultimate consumer. Let us look at exactly how and let us examine the merits and demerits of labeling from all those points of view.

As far as this discussion goes, one thing we will have to eliminate is the subject of branded merchandise and the substitution of a brand name in place of an informative label. Up to five or ten years ago, when the competitive situation with regard to the stores own brands was not quite as difficult as it is now, the brand name was said to be all the customer had to know. The company probably had an excellent standing, they had been producing excellent merchandise for a great many years.

However, the picture has changed very radically in the last few years, and here is how it has changed. Many department stores have decided that they are tired of selling someone else's name. They are interested in selling their own merchandise, under their own name; so that the customer will have built up in her mind a feeling of confidence in the store. This is true of such stores as Macy's, Hudson's and Gimbel's for whom my organization acts as Bureau of Standards.

It is essential for a department store to accurately weigh the advantages and the disadvantages of many products in the same price class which are offered to them. Let us say, for instance, that a store is offered 10 makes of sheets. Which sheets shall they buy? There are several ways of determining this. They could run a long series of tests, by giving dozens of those sheets to various

*Presented at meeting, New York Section, Jan. 27, 1939.

**Secretary-Treasurer, Industrial By-Products & Research Corp.

customers and having them used for long periods of time in actual home use, or they can send the sheets to a textile laboratory. The former method might conform more accurately to actual used conditions but it might take several years to get the answer.

Therefore it is up to the laboratory in many instances to evaluate accurately the comparative merits of *consumer* merchandise in the way you folks do on *technical* products. If five dyestuff manufacturers offer you a dyestuff to do exactly the same job, what you do is have your own technicians run a series of tests to find out the exhausting properties, the comparative money value, the fastness, etc. When the test is finished you say, "I am going to buy from 'A' Company because 'A' Company is giving me the best value."

More and more the department stores are finding it pays to do this and they have to find out for themselves exactly what these offerings will do.

Now let us say a department store has decided it will buy the "Super-Double-Wear-Last-Long Sheet." What is the next step? They can either offer their merchandise over the counter without any explanation—just put the name "Super-Double-Wear-LastLong Sheet" on it and sell it for $1.69—or they can do a much more intelligent job; they can put the facts about that sheet, as dug out by the laboratory, on a label, or facts as they have been furnished to them by the manufacturer. That puts them in the position of being able to supply the customer with usable information which is exactly what the manufacturer of dyestuffs or the manufacturer of finishing materials does when he sells you. He tries to give you as much usable information about his product as he can. He knows you are entitled to it and that is only the basis on which you can buy intelligently. I don't think there is anybody who can find fault with this viewpoint.

Instead of making this a speech, I would prefer to have you ask questions as I go along, rather than have all questions go over to the end when we may forget them. If you have no objection to that, I will ask if there are any questions that have arisen in your minds as far as I have gone.

Mr. Herrmann: I would like to see whether we are thinking along the same lines.

Let us say a consumer of a dyestuff or of a finish has been given all sorts of competitive offerings and takes them to his laboratory to evaluate them. You say that a trained technician does the work. If Mrs. Jones goes to a department store and she sees a sheet labeled as having such and such tensile strength, such and such shrinkage, such and such this and that, is she able to evaluate those virtues? Does she understand what they mean, or, are you confusing her with a lot of technical data that she doesn't understand? Isn't that the reason she would rather buy Eagle Brand, or some other brand that to her typifies the best? She doesn't know what the detail is, but she would rather have the conclusion arrived at by some house which has been in business for many years and which thinks well enough of its product to spend a fortune in advertising it.

Mr. Simon: That is a splendid question, Mr. Herrmann. You have put your finger on one of the nerve centers of the entire labeling problem. I can only give you one answer to that. When I asked the same question of Miss Ruth O'Brien of the Bureau of Home Economics of the Department of Agriculture in Washington, she said, "Give the women the facts and they will educate themselves in their use."

As far as I am concerned, it is a highly debatable matter as to what the consumer does want to know.

However, let us look for instance at the last issue of one of the consumer's publications. It ran a survey on sheets and found that some of the well advertised brands, carrying names which we have been taught to look at with respect, stand pretty far down the list as far as consumer value is concerned. Some of the store brands are high on the list. On the top of the money value for sheets in the New York market, I understand are those sold by mail-order houses who have had a great deal of experience in using the testing laboratory as a judge of consumer value. Some of the other organizations have not had quite as much experience. But it is interesting to note, in direct answer to your question that some of the well advertised brands in many instances were way down as far as count, weight, strength and resistance to abrasion were concerned. While I am far from agreeing one hundred per cent with many of the conclusions of the professional consumers' organizations, I know from my own experience that many of those facts are true.

Mr. Kapelsohn: Mr. Simon, I have read this consumer's organization's report, and I believe that the picture you paint of it is a little wrong in this respect; they did show that certain of the well-known brands were low down on the list, but there were cases where the same brand name was applied to two different sheets and possibly in a slightly different form—for example, one company has two sheets, a high grade sheet and a low grade sheet—and the high grade sheets of all the lines were fairly close together.

This organization made one mistake, which is exactly the same mistake that every consumer is going to make if the facts are on the label, and that is, they place too much weight on too little differences. Let us say a consumer sees two different sheets, with possibly a difference of thirty cents between them. One is marked tensile strength warp 70 pounds, filling 70 pounds, and the next one is marked tensile strength warp 71 pounds, filling 72 pounds. Actually, you and I know there is no difference between those two sheets, but the consumer, seeing those figures, may be very much misled, and the actual effect of putting too detailed technical information on a label, instead of having the label indicate just sufficient of the laboratory

work that has been back of that label, may be to mislead the customer much more than to help her.

Mr. Simon: I wish I could argue with Mr. Kapelsohn, but I can't because I know from my own experience that much of what he says is true.

I have brought with me a series of labels in which I think you folks may be interested. These were taken at random from a list of about 450 items which we have tested for the Gimbel organization over the last two or three years. I am distributing these simply so that you can see our philosophy, or our point of approach in trying to attack this problem. The things we are interested in the labeling of textile items particularly are: "What the item is made of." "What service it will give," and "How to make it last longer."

Let me admit at this point that we are working in a very fluid field. We are hardly working with a science but with an art, because science shouldn't depend as much on the personal element for interpretation as does an art. At the present time we frequently don't exactly know what the correct tensile strength should be for service. We do not have what I consider as adequate tests for resistance of textiles to abrasion. The resistance to slippage, for instance, of silk or rayon fabrics which we consider of considerable importance, is very imperfectly understood at the present time. A slippage test was worked out a number of years ago and we have used it frequently but we know perfectly well it is not one hundred per cent right, so all that we do is to use it as a guide.

As a typical example of the lack of correlation between laboratory tests and actual practice let me take some work that was done a few years ago at Penn State. Penn State has very much the consumer's point of view on textile merchandise. They had women in their Home Economics classes make up dresses, and sufficient yardage was kept so the laboratory could make tests. The women made the dresses up, themselves. They had them washed or dry cleaned as the material called for, and the entire life history of the dress was charted. In examining records we find something that I consider highly important. In general, textile laboratories consider 20 pounds as a minimum tensile strength for serviceable fabrics, but in going over the results of what happened to the dresses over a great many months, there were many which gave acceptable service which tested far below 20 pounds.

I am willing to admit that many laboratories are weak on the interpretation of technical data. The truth is that here is so much more to be known, that the field is so new that we have only begun to get our teeth into it.

Take the question of resistance to slippage of seams. One laboratory says that six pounds is O. K. Another says that 16 pounds has to be the minimum. In our laboratory, we consider 10 to 12 O. K. Only two weeks ago, however, we received a complaint from one of our department store clients. A dress had been made of a viscose rayon crepe, with a belt to tie in the back. There was a seam at the middle of the front. They were separating at this seam and the women's slips were showing through. We ran a series of slippage tests and found, as far as slippage was concerned, they were good, that is, they required 15 pounds to produce ¼ inch slippage. But, under a very small pull they gave ⅛ inch and then stopped. This amount was just enough to cause trouble. The standard test did not show this up well at all.

There are so many of these small points and so many important technical points that are still to be cleared up, that all we really should do in thinking about the laboratory work on textile merchandise is to take the technical facts as a *guide* and not as the final complete answer.

Let us take as a typical example the matter of color fastness. I imagine at least fifty per cent of the men in this room are interested in this question. There is a standard A.A.T.C.C. test for resistance to perspiration. As far as I am concerned we would like to see that test discarded entirely and I will tell you exactly why. My organization acts as consultants for men's wear manufacturers and lining converters. In the course of the last four years, we have tested over 3,000 samples of lining fabrics with the A.A.T.C.C. test, and at least twenty per cent of those have not passed. For example, the browns may show distinct reddish discoloration on a white shirt fabric. If our clients look at the tests they say, "That is terrible. We can't use that lining, we are going to reject it."

Now let us look at the facts. One of these concerns sells 12,000,000 yards of lining materials a year and we receive all the customer complaints that come back from the retail stores. In the selling of over 12,000,000 yards of lining, of which a very fair percentage would not pass the A.A.T.C.C. test, they received less than a hundred complaints in one year.

There are many instances where customers do not complain but this is not one of them, because if a man perspires badly, or is caught in the rain, and his vest back bleeds onto his white shirt, he definitely kicks. Or, if he is wearing a white shirt and the perspiration fastness of the lining material is not good and it bleeds under his armpit, he complains. Women expect comparatively little service from two-thread stockings, let us say, but men do not expect poor color fastness from lining materials.

It proved to us very definitely that while this test has been generally accepted by technicians, it is too severe, at least in its interpretation. We have substituted in place of that test one which we consider much more practical, which is milder, and which we know accurately reproduces what happens as far as complaints of this type are concerned. We take a piece of the lining material and place it on a piece of desized white shirting. We make a sandwich out of that by putting it between two pieces of plate glass, with a definite weight on it. Before placing the weight on it, we soak the lining and white

fabric with a measured amount of synthetic perspiration. After half an hour we remove the weight and dry the two pieces separately and examine the white cloth for bleeding. In that way we get exactly the effect that men complain about. When we have made tests on linings out of the suits where a complaint has been made, we find our test matches the stain on the shirt.

The simplest thing in the world is to make a laboratory test that *looks* sensible, and the hardest thing I have found is to make one that is *really* sensible, practical, and that really duplicates what happens in actual use.

Are there any questions on what I have just covered?

Mr. Lindsly: What do you use for the perspiration solution?

Mr. Simon: We usually use both of the solutions that are suggested by the A.A.T.C.C.—the acid and the alkaline test. As a matter of fact, it is a little foolish on linings because we find we get practically the same result with water. For the majority of tests, I think you will agree that moisture is the active agent that causes bleeding.

I would like to break up my talk for a moment, just to show you a moving picture which is, I am willing to admit, a somewhat crude product. We built it as we went along What I hope to do is to show what actually happens when a department store has decided to give its customers products with a label stating the facts about the merchandise. In this picture we illustrate a half dozen typical customer transactions and then take you into the laboratory to show the type of tests that are actually made.

. . . A motion picture, entitled, "Guns of Science" was shown at this point . . .

Mr. Simon: Ladies and gentlemen, I hope you did not mind the selling that was in there and accept my apology for it. I had no way of getting that out of the film. It was produced primarily for the Gimbel organization, but I thought you might be interested in seeing some of the tests that we actually make in our laboratory.

If there aren't any questions, I will continue and discuss the question of whom labeling affects. It actually affects everybody in the entire chain of distribution. Let us take, for a moment, just the retail store's angle. The desire and the willingness to label textile products involves the willingness to take more responsibility than stores assume without it. It means that a department store cannot "turn around" as fast as it did before, for this reason: Without labeling a buyer of men's shirts is able to go into the market, select the resource which he considers satisfactory, and buy from that resource. If the manufacturer has a strike, if he raises the price, if the deliveries are not right or for a hundred and one other reasons the buyer decides to switch to another resource, he has been able to do so without any difficulty.

If, on the other hand, he decides to buy a shirt from the XYZ Shirt Company, whose broadcloth has a count of 160 by 80, let us say, with a warp strength of 80 pounds, a filling strength of 30 pounds and a shrinkage of less than 1 per cent, and he has labeled his merchandise with these and other facts, if he has any difficulty with this resource it means that he has to go to another resource and buy exactly the same thing. It makes his operation less flexible from a department store point of view.

It is for that reason, therefore, that it is absolutely essential in any labeling program with a department store that the buyers be *completely* sold. In other words, if a buyer is told by his merchandise manager, or by the store manager that he must label his merchandise, it will be very much like the story I always like to tell about Eddie Cantor. He put on a show in London and when he came back to this country they asked him how his show went. He said, "Gentlemen, I got it over and there it lay." (Laughter). That is exactly what happens with the labeling program; if you tell your buyers what to do and they are not completely sold, you have gotten your idea across and there it lies. While a department store is in one way organized somewhat like an army, there is one great essential difference—the buyers don't *have* to do exactly what they are told. Unless they are perfectly willing, voluntarily, to follow through the program that has been laid out for the entire organization, the program, insofar as the buyers who are not "sold," will not be a success, I can assure you. It is therefore absolutely essential that the entire personnel be "sold" on a labeling program, or *it will not work*.

We have had some instances of that. We have many buyers who work very closely with the Bureau of Standards in developing "Tested" items, and we have other instances where they are not willing to work with us. Where they are not willing to do so, the program is not successful.

Let us see who else in the department store is affected by a "labeling" program. The advertising department welcomes it with open arms because for the first time they are given actual *facts* as selling ammunition. They aren't given what the seller of the merchandise *claims* the merchandise will do; they are given the facts as to what the merchandise will *actually* do. If the laboratory finds a shirt doesn't shrink, then it doesn't shrink.

Who else is affected? The sales people and they are, as far as I am concerned, the missing link in this whole program, because while a store may buy excellent merchandise, and have it tested and labeled, if they do not get the program across to the people who actually do the selling, it is practically worthless. It is like building a bridge and leaving out the span that connects it with the shore if they don't get it across to their customers. It is for that reason that the sales people must be sold and sold again. It is a constant selling job; you can't tell it to sales people once and expect it to get over. It has to be re-told constantly and checked up time and time again.

One of the hardest jobs is to make sure that the sales

people, who are actually handling the merchandise, know the facts.

I have covered, to a certain extent, the commercial angle of this question. One of the things that I very definitely would like to get across is the question of relation of quality to price. In my estimation, price is as much a part of an item as the material from which that item is made. It is just as much a part of a shirt as the cut of it. Price is the one thing that we must never forget when we are testing merchandise. It may sound very obvious, but it is the kind of thing that is constantly forgotten. A stocking which is a splendid value at 59 cents is junk at 79 cents. A shirt which sells for $1.00 may be the best shirt that can be made to sell for $1.00, but at $1.39 it is no good. Price must be taken into consideration when considering labeling. If a woman is buying, she wants to know two things: she wants to know the value of the item comparatively and she wants to know it absolutely. She wants to know, "How will it wear?" and she also wants to know, "Will it give me as good wear as I can get out of other similar items at the same price?"

It is on that basis that we run into more difficulties than we do with any other single problem. Let us take hosiery, as a typical example. What is the best that we can expect out of a 59-cent stocking? Well, we can test, let us say, a dozen makes of 59-cent stockings and pick out one that is the best, but we still know of course that as far as closeness of knitting, twist of silk, needles and courses in the stocking are concerned, we are not going to get in that stocking what we will find in a dollar stocking. In other words, merchandise has to be considered from two points of view, (1) on a *comparative* basis and (2) on an *absolute* basis.

The technical difficulties that we run into are serious ones. As I outlined before, laboratory work on textile merchandise is definitely in the state of an art. It is not a true science, and any honest technician who believes that he is doing completely scientific work is largely wrong, because we are sure at the present time we don't know sufficiently well the relation between many of the things for which we test and what happens in actual use. For instance, the use of tensile strength as the final criterion of the worthwhileness of textile merchandise is considered fallacious by us. We have had so many instances where a fabric with higher tensile strength actually does not resist abrasion as well as another of lower strength.

Another one of the things that comes up constantly is the question of *fit* in garments. There was a survey made several years ago by a woman's club in Rochester, New York, if I remember correctly. They had women buy slips the way they were used to buying them (without trying them on) and they had other women try the slips on at the time of purchase. They found that if the women tried them on and got a decent fit, they obtained much longer wear out of them. That is the kind of thing that the laboratory can't check. What I am trying to do is to show you the limitations of laboratory work with regard to labeling. At the present time, if we are honest with ourselves, we know our limitations. The best we can do is to pick out those characteristics which we think are of importance to the consumer and put as many of those as possible on the label.

Very few producers of merchandise do not claim the world for their product. I ran into an exception to that last year. We had run a series of tests for one of our department store clients on crush resistant velvets. We examined the products of eight manufacturers, and we knew perfectly well that there were going to be complaints on some of them because of the formaldehyde processed velvets definitely developed an odor under hot damp conditions.

After telling our clients about this they said, "Well, Mr. Simon, what are we going to do?"

I said, "We will have to get the manufacturer to accept full responsibility."

So they decided on a certain resource, called in the sales manager and said to him, "We have chosen you as the supplier for our crush resistant velvets for the next year."

He said, "Gentlemen, that is fine. I appreciate that very much. Where is the hook?" (Laughter)

They said, "Well, there isn't any hook. We just want to know whether there has been any difficulty with these velvets."

He said, "Yes, gentlemen, they stink." (Laughter)

They said, "What do you mean?"

He said, "You know the answer or you wouldn't have me in here to tell you. We have found that under certain conditions of humidity and heat, there may be some odor developed. Now that you know it, we will be very careful to select for you only the pieces that don't smell."

That is one of the very few instances in my business career when the supplier was perfectly willing ot tell what was wrong with the merchandise before it as purchased. (Laughter.)

Mr. Holterhoff: That story brings up a question: Do you at any time assume responsibility for the quality of the cloth which you recommend, or do you still turn back to the manufacturer and blame him if there is anything wrong that you yourself have not discovered?

Mr. Simon: You will have to define what you mean by the word "you." When you say "you" do you mean the department store for whom we work, or our own organization as a laboratory?

Mr. Holterhoff: The laboratory which does the testing and the proving.

Mr. Simon: We definitely assume no responsibility. There are too many things that can happen between the inception of a fabric and when it gets on the customer's

back for us possibly to be able to foresee everything that might happen. As a matter of fact, I assure you that if there had not been rumors of that in the market we would never have tested the velvets for odor. There are too many things that can happen which we can't possibly foresee, and for which we have to begin testing after the damage has occurred, or after we find that there is some weak point from the consumer's point of view.

I found, rather to my surprise, that there is considerable interest here this evening in a subject with which we have been very closely identified, and that is the atmospheric, or acid, or fume fading of acetate rayons. I happen to have with me quite a long series of experiments and tests which we have run on exactly that subject. I assure you that we would never have started to test a fabric for its resistance to atmospheric fading unless there had first been complaints as a result of actual use.

Fabrics have been sold for hundreds of years. They have faded because they have not been resistant to sunlight. They have stained because of perspiration. There have been storing troubles. There have been tendering troubles. There have been washing difficulties. But I have not heard of a condition which duplicated what happens on certain types of acetate rayons which use a particular type of blue dyestuff. Therefore, we would never think of examining all fabrics for that particular factor. There had to be some trouble in actual use before we began to test for it.

Mr. Holterhoff: That doesn't answer my particular question. I had in mind what you said of the advantages to the consumer and the advantages to the department store in their advertising. Of course, the fear arose in my mind as to just what trouble that is to the manufacturer. In the first place, the manufacturer, before he markets his goods under his own name, ascertains for himself whether or not he is likely to run into claims on that article. He must first satisfy himself. As you, yourself, mentioned, the velvet man admitted his goods did stink. He would rather admit it than have it thrown back into his face later.

Mr. Simon: But he didn't say it *before* he offered it. He stated it when he saw he was going to be found out.

Mr. Holterhoff: Well, isn't it strange that the department store didn't ask for a claim against this man?

Mr. Simon: No orders had been placed up to that time. It was a new treatment that had been on the market only a few weeks. We had heard rumors that there had been difficulties with this particular type of formaldehyde finish.

Mr. Holterhoff: Couldn't it have been that the man was protecting himself and would have said that whether you had called him in or not?

Mr. Simon: I am sure he wouldn't have, because none of the other suppliers said a word about it.

Mr. Holterhoff: Isn't it customary to blame the manufacturer if anything is wrong of that nature?

Mr. Simon: Well, if it isn't fair to blame the manufacturer, who else is there to blame unless the customer is obviously at fault?

Let me give another example, entirely out of that field, which I think will prove that point.

Yesterday, one of the best laundries in Philadelphia with whom we are very good friends brought to us a pair of men's flannel pajamas. The pajamas were mostly white, with a kind of darkish brown and pink stripe in them. In the laundering process, the entire garment had turned a kind of pinkish brown color. They said to us, "Is it possible that we did that, or is it due to the merchandise itself?"

Since we couldn't tell by visual inspection, we went to the store that had supplied the pajamas, got identical pajamas, and washed them with a mild home laundering and they stained exactly like the complaint. Whose fault is that?

Mr. Holterhoff: It is the manufacturer's fault, of course, or else that of the supplier or the dyer. But I have in mind the fact that the manufacturer must not only meet his own specifications, must satisfy himself, but he has added to this list of specifications also those which you develop.

Mr. Simon: We haven't developed those. We had nothing to do with the velvet developing an odor. We just heard that some dresses which had been sold of this particular type finish had been the cause of a great deal of trouble. When we heard about that, when the time came to buy a supply of it, we decided to test all of the offerings, which we did.

Mr. Holterhoff: Didn't you also develop a series of extra tests which that manufacturer didn't think were necessary? Perhaps it was more important to him to have the goods non-odorous than to have them meet several of your other specifications.

Mr. Simon: We didn't lay down any specifications. All we did was to put all the fabrics through identically the same tests and on the basis of our findings select the one which we thought was best. We didn't lay down any specifications at all, any more than we laid down any specifications for these pajamas.

Mr. Holterhoff: But didn't you mention other tests in regard to other materials which you, yourself, had developed?

Mr. Simon: Be more specific about that.

Mr. Holterhoff: What I am trying to say here is that you have your own specifications on a number of things.

Mr. Simon: When you say "specifications" do you mean tests, or do you mean—

Mr. Holterhoff: Requirements. You require that a garment stand so much abrasion, so much of this, so much of that. In the case of sheets, your minimum shrinkage is probably a certain figure, your count is a certain figure, your tensile strength is a certain figure. That is determined by yourself, is it not?

Mr. Simon: No, that is not. That is determined by

the market. I am very glad you brought out that point because it is exactly the point I wanted to make when I said that price was as important as any other thing that goes into the merchandise. In other words, if our clients are going to buy a sheet to sell for a dollar we don't set up specifications for a dollar sheet. What we must do is go into the market and test the sheets which the market is offering in our price range, and pick the best.

Mr. Holterhoff: Yes, but it is your own interpretation of what the market wants.

Mr. Simon: You mean what the store wants?

Mr. Holterhoff: No, you said you make your tests to meet the market.

Mr. Simon: No, I said that what we did was to go into the market and buy as many offerings as the stores think necessary to get a good cross-section of the market and then select, as a result of tests, the best we can buy at the price.

Mr. Holterhoff: You make your own tests?

Mr. Simon: That is right.

Mr. Holterhoff: You base your tests upon what the consumer requires?

Mr. Simon: As much as we can, yes.

Mr. Holterhoff: That is your own interpretation?

Mr. Simon: That is right.

Mr. Holterhoff: The manufacturer has his own interpretation of that. He has to meet not only his own, but yours, also.

Mr. Simon: I frankly don't know how to answer your question. Let me take again the question of sheets. Let us say that one of our retail store clients is interested in buying a sheet which he is going to sell under his own brand name for $1.50. He goes into the market and he decides that he wants to do business with one of ten resources. Is that clear?

Mr. Holterhoff: Yes.

Mr. Simon: Those resources are making the sheets the best way they can for the price for which they sell them. We have had nothing to do with the setting up of those specifications at all. We take those ten sheets and we bring them to the laboratory. We may not know the name of the manufacturers or the price. The sheets are labeled A, B, C, D, E, and so forth. We test those sheets. We find that one sheet has a finished count of 74 by 74, and a tensile strength of 72 pounds warp and filling, let us say, and a shrinkage of zero. We find another sheet has a tensile strength of 65 pounds and a finished count of 68 by 68, and so on through the line. We make abrasion and other tests on them and on the basis of which is the best, we select one. We have not set the specifications. We have not asked the manufacturer to meet any specifications. We are taking the sheet as he offers it at the price at which he offers it, and testing it against comparative merchandise of the same price.

Mr. Holterhoff: But still the fact that you choose a certain one as the best does not relieve that manufacturer of his own responsibility.

Mr. Simon: What responsibility does he have except of living up to the original merchandise that was offered to us? In other words, if his original sheet that he offered to us was 70 by 70, had a tensile strength of 70 by 70, and the merchandise, when it comes in, has a tensile strength of 65, why should he be relieved of his responsibility?

Mr. Holterhoff: But suppose there is another flaw which you have not discovered?

Mr. Simon: All right, say it smelled. That is a perfectly possible fault. Certainly he is not relieved of that responsibility just because we didn't find it. We make no pretense of being omniscient.

Mr. Chut: Doesn't this indicate that the manufacturer should have a chemist or at least a finisher inasmuch as he is responsible for the goods? Then the department store can't send the goods back if they are not perfect, and if they are not perfect he would find it out before he lost all this money on bad merchandise,

Mr. Simon: Well, I think the majority of the progressive mills and manufacturers today have their own control departments. In other words, I am sure that the manufacturers of Cannon sheets, let us say, regularly make check tests to assure themselves that their merchandise is living up to their own specifications.

Mr. Moran: Doesn't the buyer, as in the case of those pajamas, for instance, specify they shall be fast to washing?

Mr. Simon: Let me answer your question with this question, sir. If you were the buyer of pajamas at any large store, wouldn't you know perfectly well that those pajamas were going to be washed? Therefore it should be perfectly obvious at any rate to the supplier of those pajamas that they are going to be washed, and therefore they have to be fast to washing. Why should the buyer have to specify an obvious thing like that?

Mr. Moran: He should know the people he is buying from. He shouldn't get a delivery that isn't fast.

Mr. Simon: There is no doubt that it was the pajama manufacturer's responsibility. He *may* have knowingly bought inferior merchandise, but I would guess that that is the kind of thing that slipped through inadvertently, that the pajama manufacturer did not mean to supply that type of merchandise because that kind of thing is just too silly to happen knowingly.

I am not talking now about shrinkage. There are many manufacturers of shirts, for instance, who supply, let us say, shirts in the dollar bracket, who know perfectly well they are going to shrink excessively. But when it comes to the question of bleeding of color in pajamas on which there is going to be an immediate complaint, there must have been a mistake somewhere.

Mr. Herrmann: Talking about informative labeling, you have touched mostly upon the type of labeling which the

department store either executes, or has executed for it, by its own service laboratory. We sense movements afoot on the part of manufacturers to anticipate these informative labeling requests.

If a group of dyers, or a group of printers, were to get together and establish an informative label which would have certain fastness gradings on it, for which they would be responsible—that is, they would be responsible for the accuracy of the label and its policing—and if these goods were to come to the XYZ Department Store carrying this label, would the department store favor merchandise so labeled? Would it in a sense make unnecessary some of the work that they now have to carry out? Do you think it is a good move for the industry? Do you think it is a good move for the consumer? Do you think it is a good move for the department stores, leaving out of the question, just for the time being, the possible influence it might have on the work of the department stores' own laboratories, which may be reduced somewhat if this thing were to become widespread?

Mr. Simon: Let me answer you this way, Mr. Herrmann: We must take into consideration always the type of merchandise to which such a label is to be applied. All of us, including myself, have the tendency to think in terms of our own business with regard to any type of product. We can't do that. We have to look at the merchandise from the *consumer's* point of view as a complete item which has to satisfy all the requirements demanded of it in use. Let us take the question of women's slips. Let us say that the XYZ slip is sold to a department store carrying O.K. for color fastness by the finisher's laboratory. You must realize that they are only O.K.ing one comparatively insignificant factor with regard to that merchandise. They are not guaranteeing fit. They are not guaranteeing workmanship. They are not guaranteeing shrinkage. They are not guaranteeing resisting to slippage. Those are all factors which are just as important, or in the case of slips, more important than color fastness.

On the other hand, when it comes to an item such as yard goods, which is sold over the counter, there you have a story which is somewhat different. There, color fastness is of greater importance, but it is still only *one* factor. In dress goods, let us say, a woman is interested in knowing whether that is washable from the point of view of shrinkage and she is also interested in how good it is for resistance to slippage. So that a color fastness tag, while it may cover one particular qualification, does not give the whole answer, as far as consumer utility value is concerned.

Mr. Herrmann: Embracing the three factors that bother, say, the cotton finishers mostly in point of color life—fastness to light, fastness to washing, and, shall we say, fastness to chlorine—if these goods were to come to you certified with respect to those three items, would you welcome such a thing?

Mr. Simon: We would welcome it immediately and I can assure you that we wouldn't get one dollar's less work from our department store clients.

Mr. Herrmann: You are going further now. You are going into service items that I am not thinking about. I know how necessary they are, but my group doesn't think in terms of buttons, or stitchings, or fit.

Mr. Simon: I know, but don't you see, as a consumer, *you* are not vitally interested in getting the suit you are now wearing, with a label on it which says only, "Lining colorfast to perspiration." For, if that were a good thing for a man's suit lining, it would also be a good thing for the manufacturers of pocketing to supply a label saying, "Pockets highly resistant to abrasion," and for the button manufacturers to put a label on there saying, "Buttons resistant to cracking." It would be a good thing for the sewing thread manufacturers to put a label on there saying, "This sewing thread has high tensile strength" and for the manufacturers of worsted to put a label on stating, "Colorfast to sunlight, perspiration and dry cleaning, resistant to abrasion and full shrunk."

Do you see how the thing would actually gather momentum? As a matter of fact, we had exactly that thing come up last year with regard to a manufacturer of women's blouses. When the waists were delivered to one of our retail store clients, you could hardly see the waists for the labels. There was a label carrying the Crown-tested Seal. There was the label of the finisher. There was the label of the blouse manufacturer, himself, and finally there was the store label. It is obviously impossible, on a piece of style merchandise such as a woman's blouse, to offer it over the counter with all those tags and labels on it.

However, as a laboratory, we would be mighty pleased to get color guaranteed merchandise, provided we were absolutely assured that the control or policing work being done was honest, accurate, continuous, and the last is probably as important as anything else, because while the easiest thing to do is to set up a specification, the hardest thing to do is to live up to it. All I can tell you is this: that we, as a laboratory, would like very much to receive labeled merchandise if we were assured that it was part of a "well policed" program. But from the department store's point of view, it could act only as a small wedge. It wouldn't act as an enormous selling point. And if it cost anything, it wouldn't be worth anything.

Mr. Herrmann: It is going to cost something. I would also say this: What you say about the waist being hidden by the labels, we understand that under the new cosmetic law, the $8 perfume bottle can't be seen for the labels describing how it was manufactured. (Laughter.)

If certain people have their way, a yard of goods is going to look pretty much like a Christmas tree, with ornaments hanging from it, with labels for every possible thing you can imagine.

Mr. Simon: I will tell you something very interesting

with regard to that. As you know, the Federal Trade Commission ruling with regard to labeling of rayon is being enforced more and more stringently, to such an extent that some of the department stores, regardless of what the fiber content is, are calling many things rayon which are not made of this fiber. We have had labels on merchandise that was all silk, calling it rayon.

This thing is backing up in a very peculiar way, and I assure you it is the truth. The department stores just don't want to be cited by the Federal Trade Commission, and the easiest way out of it is to call everything rayon. (Laughter.)

Dr. Harold: Are there any requirements on the part of any of your organizations for fastness to chlorine in washing tests?

Mr. Simon: There is the CS 59-36, Dr. Harold. That takes chlorine into consideration.

Dr. Harold: But there are some laboratories that are now demanding what might be called a continuous application of that hypochlorite washing. There is one laboratory in town that receives a number of samples, the National Dry Goods Association. They ask that some of the fabrics stand five washings in the hypochlorite wash, with intermediate exposure between the washings of two hours in a Fade-O-Meter. I was wondering how official, or how extensive that test is becoming, and if your dyestuffs, or dyed fabrics have to pass that extremely harsh test.

Mr. Simon: I can't speak for anyone else but ourselves, Doctor, and all I can tell you is that we are not doing it that way. It is a simple thing for a laboratory to set up a test that nobody can meet and it is one of the things that we try not to do in our organization. We try to duplicate as accurately as possible what happens in actual use. That is the philosophy back of all of our work. We try to follow a technique that we call "working backwards." That is, we work backwards from the consumer's point of view, from what happens in actual use. Frequently that is mighty hard to do, but that is an ideal towards which we work.

Mr. Crowley: May I ask you what your opinion is on a customer bringing back a dress for which she has paid, say, $3.98, and it was not guaranteed to be fast to perspiration. She wore it several times and it bled. Do you believe she is justified in bringing that back?

Mr. Simon: Well, our feeling about consumer merchandise is a very simple one, especially when it comes to the way women buy. Women buy price and style, and expect utility. (Laughter.) That is one of the foundations on which our work is based.

As far as I am concerned, regardless of price, a customer is definitely entitled to a refund, or a new garment, unless she has been warned at the time of purchase that there is a possibility that some type of trouble will develop. With regard to department store merchandise the idea of *caveat emptor* is supposed to have gone out the window a great many years ago. Let us take the question of acetate rayon dresses. We have told our department store clients time and time again that unless a dress carries a label which definitely states that a warm and not a hot iron should be used in pressing it, when a woman destroys the garment because she uses too hot an iron, it is the store's fault and not the woman's. It is up to the store to warn her, or she will continue to follow the same temperatures that women have always used on silk, cotton or wool. Therefore, it is up to the store to warn its customers if there is something unusual in the method in which those garments should be handled.

Mr. Crowley: But then the stores will come back to you on one thing there: If the sales girl tells a customer buying a $2.98 dress that it will bleed, the customer won't buy that, and therefore the store says, "We can't do that, or we will lose sales."

Mr. Simon: That is perfectly all right. They should lose the sale or accept the responsibility. There is no doubt in my mind as to what the answer is. I know we constantly hear the declaration: "Well, they (the converter, the finisher, the manufacturer or the retailer) won't pay any more for it, therefore, we can't give them fast colors."

Mr. Knowland: I would like to know who is going to "hold the bag"?

Mr. Simon: I can't tell you that but I know the laboratory isn't.

OUTING, PHILADELPHIA SECTION

THE annual outing of the Philadelphia Section was held at the Whitemarsh Country Club on Friday, June 9, 1939. Golf, trap-shooting, sports and indoor games were enjoyed by the 400 members and guests who attended this outing.

The president of our Association, Mr. Evanson, presented the Alban Evanson trophy to Mr. C. J. Haas for low gross in golf. Prizes were also awarded for golf, trap-shooting and door prizes.

Dinner was served at 6:30 P. M., preceded by one of the biggest and best floor shows that the Philadelphia Section has ever held.

The outing was enjoyed by all who attended and a motion carried on the floor that the Philadelphia Section will hold another outing this year sometime in the fall.

Mr. Arthur E. Jones of the Alco Oil and Chemical Co. was Chairman of the Outing Committee.

Respectfully submitted, J. P. CONAWAY, *Secretary*.

REPORT, LOWELL TEXTILE INSTITUTE STUDENT SECTION

ON May 12, a meeting of the Section was held to elect the officers for the school year 1939-40. They were as follows:

Chairman: Vernon W. Colby.

Secretary: Neil Manning.

These officers take office at the beginning of the year in September, 1939.

Respectfully submitted, WILLIAM B. PRESCOTT, *Secy*.

HEADQUARTERS FOR ANNUAL MEETING

The Copley-Plaza Hotel

OCCUPYING the former site of the old Boston Art Museum, the Copley-Plaza is one of a group of imposing buildings that lend such beauty and distinction to Copley Square which it faces as to cause it to be universally considered, architecturally, one of the finest in the country, if not the world.

One of the most imposing of hotel edifices, the Copley-Plaza was erected, but not completed, in 1912, for in accordance with its policy of constantly adding new features of equipment and service it can never be, strictly speaking, completed. Thus it is that today, as then, the Copley-Plaza whose name is synonymous with the best Boston traditions of hospitality and quality, stands out as New England's most distinctive hotel. Here social Boston meets for its important functions, here students from famous New England colleges and the smart debutante set dine and dance nightly in the lovely Sheraton Room and here travelers from all corners of the world meet on the Copley's famous Merry-Go-Round Bar.

The Hotel, itself, is seven stories in height and is built of limestone and brick. So substantial is its construction that it enjoys the lowest fire insurance rate of any hotel in the United States. Although its facade which faces Copley Square is impressive, it is not until one enters and walks down the Promenade toward the Lobby that the charm, elegance and perfection of detail is realized. The Main Dining Room, with its fountain flanked with fresh flowers and fern in the center of the room, is decorated in the gracious style of Louis XIV, with marble bases, gray Sienna stone for walls and a ceiling that displays some of the loveliest mural work in pastel hues to be found anywhere. In addition to the rooms already mentioned, there are, of course, the Grand Ball Room,* also in the style of Louis XIV, capable of seating one thousand persons at dinner and many more for concert or dramatic entertainments; smaller private banquet rooms; the Gentlemen's Cafe; the "Pub"; and a number of comfortable and perfectly appointed writing rooms, rest rooms, beauty parlor and barber shop.

Not only is the Copley-Plaza situated in the city's most exclusive shopping section but all the numbered auto routes start here, sight-seeing and airline busses pick up passengers here while Back Bay Station at which all the in-coming and out-going New York and Western trains stop, is within three minutes walking distance.

Operated under the direction of the United States Realty and Improvement Company which also owns and operates the Plaza and Savoy-Plaza in New York City, the Copley-Plaza is under the personal management of Mr. Arthur L. Race, one of the most widely-known men in hotel circles in this country. The atmosphere that pervades the Copley-Plaza is directly attributable to him and is the result of his belief that one must "render service which shall be a little more complete, a little more hospitable, and a little more pleasing than even the most exacting hotel guest expects."

(*Meeting will be held here.)

SEPTEMBER 15th and 16th, 1939
BOSTON, MASSACHUSETTS

Textile Testing—

(Continued from page 358)

REFERENCES

(1) Speakman, J. B. Reactivity of the Sulfur Linkage in Animal Fibers. Journal of the Society of Dyers and Colourists *52*, 335, 380, 428 (1936).

(2) Hirst, H. R. Some Analytical Methods Used for the Identification of Dyeing Faults. Journal of the Society of Dyers and Colourists *53*, 45 (1937).

(3) Harris, M. Effcet of Alkalies on Wool. American Dyestuff Reporter *24*, 562 (1935).

(4) Smith, A. and Harris, M. Oxidation of Wool—Effect of Hydrogen Peroxide. American Dyestuff Reporter *25*, 180 (1936).

(5) Crowder, J. A. and Harris M. Alkali Degradation of Wool Protein. American Dyestuff Reporter *25*, 264 (1936).

(6) Harris, M. and Smith, A. State of the Sulfur in Oxidized Wool. American Dyestuff Reporter *26*, 413 (1937).

(7) Smith, A. L. and Harris, M. Bibliography on the Chemistry of Wool. American Dyestuff Reporter *27*, 183, 363 (1938).

(8) Harrison, W. Keratin Fibers. American Dyestuff Reporter *27*, 393 (1938).

(9) Ryberg, B. A. Bibliography on Methods for Determining the Causes of Damage Appearing in Wool After Dyeing. American Dyestuff Reporter *27*, 571 (1938).

LEAD ACETATE TEST

The lead acetate test of Smith and Harris is used as a test for bleached wool. On oxidation with peroxides, it is believed that the disulfide is oxidized to a series of compounds as follows:

(1) R — S — S — R (cystine)
(2) R — SO — S — R
(3) R — SO_2 — S — R
(4) R — SO — SO — R
(5) R — SO_2 — SO — R
(6) R — SO_2 — SO_2 — R

Upon hydrolysis and treatment with lead acetate, compounds (1), (2), and (3) can form lead sulfide (black) whereas compounds (4), (5), and (6) cannot form sulfides and so remain white. The test is sensitive to pH and the lead acetate solution must be buffered to pH 5 for best results.

Preparation of .05 per cent lead acetate buffered to pH 5:

200 cc. of 1-normal sodium acetate solution
20 cc. of 2.5 per cent lead acetate solution
68 cc. of 1-normal acetic acid
712 cc. of distilled water

The test is carried out by boiling approximately one gram of wool in 80 cc. of the lead acetate solution for 40 minutes; the sample is then rinsed and dried at room temperature. A black color indicates unoxidized wool, a white color indicates oxidized wool. This test is obviously not suitable for dyed wool.

In the case of light damage, oxidation occurs but not of the same type as in the case of peroxides; light damaged wool therefore does not show up in this test (i.e., a dark color is obtained). The equations are believed to be:

$$R{-}CH2{-}S{-}S{-}CH_2{-}R + HOH = R{-}CH_2{-}SH + R{-}CH_2{-}SOH$$

$$R{-}CH_2{-}SOH = H_2S + R{-}CHO$$

$$H_2S + 2O_2 = H_2SO_4$$

since light damage has been shown to be due nearly entirely to a combination of hydrolysis and oxidation.

Alkali damage, which is believed to occur according to the first two of the above equations, also gives a black color and hence cannot be distinguished by the test.

REFERENCES

(1) Smith, A. and Harris, M. Oxidation of Wool—Lead Acetate Test for Hydrogen Peroxide—Bleached Wool. American Dyestuff Reporter *25*, 183 (1936).

(2) Smith, A. and Harris, M. Oxidation of Wool—Photochemical Oxidation. American Dyestuff Reporter *25*, 383 (1936).

THIOCYANATE TEST

This test for oxidation of wool shows oxidation by peroxides, chlorination or bromination, or by light; being a color reaction, it is not suitable for use on dyed samples. Three solutions are required:

Solution A: Equal parts by volume of acetone and distilled water, acidified by the addition of 1 per cent by volume of 6/N sulfuric acid.

Solution B: 1 gram of potassium thiocyanate in 30 cc. of Solution A.

Solution C: 1 gram of ferrous ammonium sulfate and 15 cc. of 6/N sulfuric acid in 50 cc. of Solution A. Solution C must be prepared immediately before the test is carried out.

The test is carried out as follows: About 1 gram of wool is cut into small pieces and placed in a 125 cc. conical flask. In another flask is placed a similar sample of wool known to be unoxidized and in a third flask the reagents are used without any sample. In each flask is placed 40 cc. of Solution A and 5 cc. of Solution B; the solution is boiled for several minutes to displace air; the heating is discontinued, 5 cc. of Solution C is added and the flask is stoppered. If a pink color develops in the flask containing no sample, distilled water is added until the color disappears; an equal volume of distilled water is then added to each of the other flasks. Unoxidized wool gives no color, oxidized wool gives a pink color.

If a pink color develops before the solution C is added, iron is present in the wool and should be removed by washing the wool in a number of changes of dilute sulfuric acid.

REFERENCES

(1) Rutherford, H. A. and Harris, M. Detection of Oxidation in Wool. American Dyestuff Reporter *27*, 179 (1938).

PAULY TEST

This is the most generally useful of the color tests since any kind of damage, whether mechanical or chemical, which will destroy, loosen, or remove the scales on wool will give the test. The theory of the test depends upon the fact that tyrosine, which is the only amino acid in wool which is also a phenol, is not found in the scales of the wool but only in the cortex. If we treat the wool, then, with diazotized sulfanilic acid no color, or very little color, will be obtained except where the reagent can penetrate through the scales and allow the diazotized base to couple with the tyrosine and produce an orange color. The test

may be made quantitative by dissolving the colored sample and comparing with a standard solution.

Reagents required:

10 per cent sodium sulfanilate—made by dissolving 88.7 grams of sulfanilic acid in one liter of water containing 20.5 grams of sodium hydroxide.

9 per cent sodium carbonate—made by dissolving 243 grams of crystalline sodium carbonate in water and making up to one liter.

8 per cent sodium nitrite—80 grams per liter.

Concentrated hydrochloric acid.

The reagent is prepared immediately before use as follows: Mix 10 cc. of 10 per cent sodium sulfanilate with 5 cc. of 8 per cent sodium nitrite, then add 2 cc. of concentrated hydrochloric acid. Allow the reagent to stand one minute before use.

The test is carried out by wetting a small sample of wool in 15 cc. of 9 per cent sodium carbonate and then adding the prepared reagent to the mixture. After 10 minutes, the wool is removed and rinsed thoroughly. An orange-red color indicates damage.

To make the test quantitative, a 0.1 gram sample is used and the test is carried out as above. The colored wool is then placed in a test tube, 4 cc. of 10 per cent sodium hydroxide is added and it is heated in a water bath for 5 minutes. The dissolved wool is then transferred to a volumetric flask and made up to 25 cc. The colored solution is then compared either visually or by means of a colorimeter with a .1 per cent solution of Naphthalene Leather Brown BS which is arbitrarily called "100 units" of damage. Edwards has suggested that a better comparison color is obtained by the addition of 292.5 cc. of .1 per cent Polar Brilliant Red to a liter of .1 per cent Naphthalene Leather Brown BS solution.

For most accurate results a control of wool which is undamaged should be run along with the unknown sample since a certain amount of coloring is obtained on practically any sample.

References

(1) Trotman, S. R. and Trotman, E. R. Textile Analysis. J. B. Lippincott Co., Philadelphia, 1932.

(2) Rimington, C. Quantitative Method for the Determination of "Soundness" in Wool and Cloth. Journal of the Textile Institute *21*, T237 (1930).

(3) Edwards, C. H. Estimation of Damage on Chlorinated Knitted Wool Fabrics. Journal of the Textile Institute *24*, T1 (1933).

METHYLENE BLUE TEST

This test determines the amount of Methylene Blue absorbed at pH 7 by a sample of wool according to a procedure similar to that already described for damaged cellulose (Chapter 13). The Methylene Blue at pH 7 is the same as that already given and the wool is first given a standard acid wash as has already been described for degraded cellulose. The wool is then divided, in a mill, into a powdery material which will pass a one-millimeter sieve, allowed to condition over night and 0.1 gram samples are weighed out (also another sample for regain determination).

Exactly 15 cc. portions of Methylene Blue solution are measured into 40 cc. centrifuge tubes, the wool samples are added and allowed to stand 24 hours; the tubes are then centrifuged, 10 cc. pipetted out and titrated against Naphthol Yellow S. The Methylene Blue absorption in millimoles per 100 grams of dry wool is calculated, as in the case of cellulose. Undamaged wools have an absorption value of about 10, wool damaged by laundering (alkali) has a higher value, 16-18, and reworked wool fabrics (acid damage) a value of around 40. The method is said to be applicable to dyed samples.

The above test is not very critical for samples which are only slightly damaged but would be very useful to distinguish reworked wool if it were not for the elaborate apparatus and long periods of time necessary for testing; these latter disadvantages make the test useless for commercial purposes.

The increased absorption of Methylene Blue by acid damaged wool is believed to be due to a new and active acid group added by the wool on carbonizing:

In dilute sulfuric acid, $R—NH_2 + H_2SO_4 = R—NH_3—HSO_4$

On concentration by heating, $R—NH_3—HSO_4 = H_2O + R—NH—HSO_3$

References

(1) Elmquist, R. E. and Hartley, O. P. Methylene Blue Absorption as a Quantitative Measure of Wool Damage. Textile Research *5*, 149 (1934).

SULFUR CONTENT

The sulfur content of the wool has long been used in research work as a measure of the amount of damage to the wool, since any form of chemical damage tends to decrease the amount of sulfur in the sample. This is possible in research work where a sample of the wool before damage is available for comparison, but on an unknown sample the method is not useful since we do not know how much sulfur was originally present, and the amount of sulfur in the undamaged wool may vary from 3.1 per cent to 4.0 per cent.

Three methods of analysis are available for determining the sulfur content: Carius method, oxygen bomb method, and the Benedict-Denis method. The Carius is perhaps the most accurate, the oxygen bomb is the simplest if the apparatus is available, the Benedict-Denis method requires no special apparatus or precautions. Since in any case a comparison with an undamaged sample must be made, if the result is to have any significance, it makes little difference which method is used; the Benedict-Denis method will be described.

Reagent: Dissolve 25 grams of crystalline copper nitrate, 25 grams of sodium chloride, and 10 grams of ammonium nitrate in 100 cc. of water.

About 0.2 gram of wool is warmed with a little pure sodium hydroxide solution until it just dissolves: a few drops of bromine are added and after a few minutes the solution is neutralized with nitric acid; 10 cc. of the reagent are then added and the mixture is evaporated to dryness. The residue is heated to dull redness for 10 minutes, cooled, dissolved in dilute hydrochloric acid and

TABLE XIX

Results of Tests for Damage to Wool

	Normal Wool	*Acid Damage*	*Alkali Damage*	*Oxidation Damage*	*Chlorination Damage*	*Light Damage*
Lead acetate test	Black		Black	Light		Black
Thiocyanate test	No color			Pink	Pink	Pink
Pauly test	Little orange color	Orange	Orange		Orange	Orange
Methylene Blue absorption, millimoles/100 gm.	Low 10-11	Very high ca. 40	High ca. 18			
Ammonia nitrogen, mgms./gm.	Low .15-.20	High above .20		High		High
Solubility in dilute NaOH, %	Low 12-13%			High over 18%	High over 18%	High over 18%
Sulfur content, %	3.1-4.0% Ave. 3.3%		Decrease	Little change—decrease after alk.	Decrease	Decrease
Total nitrogen content, %	16.16-17.07% Ave. 16.72%	Decrease	Increase	Slight decrease	Little change	Decrease
Soluble nitrogen, %	Low 4-5%		High ca. 32%			

filtered. The sulfate in the filtrate is then determined by the usual quantitative procedure with barium chloride.

REFERENCES

(1) Trotman, S. R. and Trotman, E. R. Textile Analysis. J. B. Lippincott Co., Philadelphia, 1932.

(2) Barritt, J. and King, A. T. Sulfur Content of Wool. Journal of the Textile Institute *17*, T386 (1926); *20*, T151, T159 (1929); *24*, T119 (1933).

TOTAL NITROGEN CONTENT

This determination, like the sulfur content, is useful if a sample of the wool before treatment is available, since only a slight change in nitrogen content may occur and there is a large variation (16.16 per cent to 17.07 per cent) in the nitrogen content of various wools. Table XIX shows the changes which may be expected in wool from different types of damage.

The total nitrogen content is determined by one or another of the various Kjeldahl determinations, the variation which has given satisfactory results in the author's laboratory is as follows: Regain is determined on a separate sample, another sample of 0.7 to 0.8 grams being used for digestion. The sample is placed in a Kjeldahl digestion flask along with 20 cc. of concentrated sulfuric acid, 10 grams of powdered anhydrous potassium sulfate, 0.2 gram of copper sulfate, 4 grams of powdered pumice, and a little broken glass. The mixture is digested for one hour or until a clear melt is obtained; it is then dissolved in distilled water and cooled. An excess of sodium hydroxide solution is then added carefully, the flask is immediately connected with a Kjeldahl distillation apparatus, and distilled for 30 minutes, the distillate being collected in 25 cc. of N/2 sulfuric acid. The excess sulfuric acid is then titrated with standard N/10 sodium hydroxide, using Methyl Red indicator.

REFERENCES

(1) Trotman, S. R. and Trotman, E. R. Textile Analysis. J. B. Lippincott Co., Philadelphia, 1932.

(2) Barritt, J. Nitrogen Content of Natural and Processed Wools. Journal of the Society of Chemical Industry *47*, 69T (1928).

SOLUBLE NITROGEN

This determination is not much used in this country, having been developed in Europe. The determination seems to be quite definite for alkali damage but involves two Kjeldahl determinations and a three day treatment of the sample.

Two samples are taken, on one of which a Kjeldahl determination for total nitrogen is run. The other sample (0.1 gram) is treated for 3 days with a mixture of 8 cc. of water, 10 cc. of 1 per cent hydrogen peroxide, and 2 cc. of N/2 potassium hydroxide. At the end of 3 days the sample is filtered and washed, the combined filtrate and washings are made acid, and a Kjeldahl determination is run on the acid solution. The results are expressed as per cent of the nitrogen in the sample which dissolves on the above treatment. For undamaged wool this is 4 to 5 per cent while for damaged wool it may be 32 per cent or more.

REFERENCES

(1) Trotman, S. R. and Trotman, E. R. Textile Analysis. J. B. Lippincott Co., Philadelphia, 1932.

(2) Krais, P. Detection and Estimation of Chemical Damage in Wool. American Dyestuff Reporter *21*, 541 (1932).

AMMONIA NITROGEN

This determination is quite significant on samples which have not been exposed to alkali treatments after the damage occurred; it is especially valuable for identifying carbonized wool. The test is not convenient for use on a large number of samples at a time.

A 5 gram sample of the wool is placed in a liter distilling flask with 300 cc. of water and 5 grams of magnesium oxide (free from carbonates). The flask is heated and 150 cc. of liquid is distilled over into 25 cc. of standardized N/100 sulfuric acid. The excess sulfuric acid is then titrated with standardized N/100 sodium hy-

droxide, using Methyl Red indicator. The results are calculated to milligrams of ammonia nitrogen per gram of dry wool. Normal wool will give a value of .15 to .20, carbonized wool .20 to .70, and damaged wool may be even higher.

REFERENCES

(1) Smith, A. and Harris, M. Oxidation of Wool—Photochemical Oxidation. American Dyestuff Reporter *25*, 383 (1936).

SOLUBILITY IN DILUTE SODIUM HYDROXIDE

This is perhaps the most generally useful test for certain types of damage (see Table XIX). The test is affected to a certain extent by the form of the sample and the figures are given for loose wool, samples of yarn or cloth should be unraveled or picked apart. The test is simple to carry out, especially if a constant temperature bath is available.

The wool is dried and weighed and is then treated with N/10 sodium hydroxide at 65° C. for one hour, the ratio of wool to solution being 1:100. The sample is filtered on a Buchner funnel or Gooch crucible, washed with about two liters of water, dried at 105° C., and weighed. The per cent loss in weight on the dry weight of the wool is calculated. This loss in weight will be normally 12-13 per cent, above 18 per cent is definitely damaged, while between 13 per cent and 18 per cent is indefinite. The test, of course, is not suitable for use on wool which has been given an alkaline treatment after being damaged, or on wool which has been damaged by alkali.

REFERENCES

(1) Smith, A. and Harris, M. Oxidation of Wool—Alkali Solubility Test for Determining the Extent of Oxidation. American Dyestuff Reporter *25*, 542 (1936).

Chapter 15—Damage to Silk

INTRODUCTION

THE structure of completely degummed silk (fibroin) while not completely cleared up is still much better known than that of wool and it is apparently much less complicated. Upon complete hydrolysis, the silk fibroin gives almost entirely three amino acids: glycine (Figure 63a), alanine (Figure 63b), and tyrosine (Figure 61); of these three the glycine and alanine predominate. It will be seen from the formulae of these amino acids that the side chains contain no active groups and so the salt and cystine linkages found in wool are lacking in silk. The fibroin, then, is considered as long chains of alternating glycine and alanine molecules held together length-wise by peptide linkages and sideways by partial valence forces (Figure 63c). Silk is rather easily swollen and dissolved, therefore, but the peptide chains themselves are susceptible only to hydrolysis. Tussah silk is more resistant than cultivated silk to acids and alkalies but less resistant to steam.

The forms of chemical damage which may occur to silk in processing are:

1. Acid damage—consisting of hydrolysis followed by decomposition.
2. Alkali damage—consisting of decomposition into a soluble form followed by hydrolysis.
3. Salt damage—acid or alkaline damage according to the hydrolysis of the salt.
4. Oxidation damage.
5. Light damage—apparently oxidation.
6. Steam damage—hydrolysis, but not like acid damage.
7. Dry heat damage.

Tests which have been used to detect and estimate damage on silk are the following:

1. Physical tests—strength and stretch. Wet strength seems particularly sensitive to damage.
2. Microscopic tests—these will be discussed later.
3. Color reactions
   a. Zimmermann test.

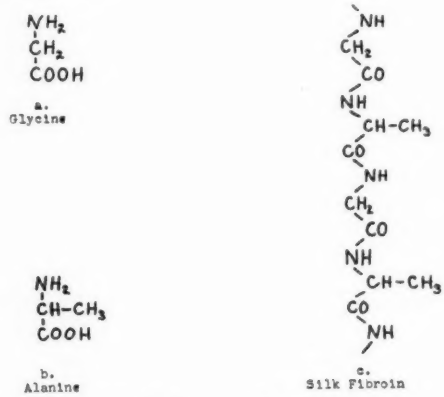


Fig. 63—Structure of Silk Fibroin.

4. Chemical content
   a. Total nitrogen content.
   b. Amino nitrogen content.
   c. Ammonia nitrogen.
5. Viscosity in zinc chloride.

The amino nitrogen is difficult to determine and requires elaborate apparatus, it will not be discussed further; the other tests will be considered in detail.

REFERENCES

(1) Scott, W. M. Chemistry of Silk and of Silk Processing. American Dyestuff Reporter *23*, 217 (1934); *25*, 451 (1936); *26*, 756 (1937); *27*, 710 (1938).

ZIMMERMANN TEST

Zimmermann's reagent consists of a solution of o-phthalaldehyde made acid with hydrochloric acid. This reagent gives no color with degummed and undamaged silk but gives a violet color with damaged silk or with sericin (silk gum).

REFERENCES

(1) Kaneko, H. Silk Fibroin: Properties. Journal of the Agricultural Chemical Society of Japan *13*, 208, 217 (1937).

TOTAL NITROGEN CONTENT

This determination is carried out by the Kjeldahl

method in the same way as for wool (Chapter 14) and suffers from the same disadvantages as in the case of wool. Normal silk contains 18 per cent to 19 per cent nitrogen (average 18.4 per cent) and tussah contains somewhat less.

AMMONIA NITROGEN

This determination is the same as was described for wool (Chapter 14). Normal silk will give a value of .07 to .12 milligrams per gram of silk; damaged silk will give a value greater than .2 milligrams per gram of silk.

REFERENCES

(1) Harris, M. Photochemical Decomposition of Silk. American Dyestuff Reporter 23, 403 (1934).

VISCOSITY IN ZINC CHLORIDE

This is the most satisfactory test for damage to silk, since it determines whether damage has occurred and gives some idea as to the amount of damage. The original method of Trotman and Bell has been modified by Tweedie. Any pipet type viscometer may be used, including the one described for cuprammonia viscosity of cellulose (Chapter 13).

A solution of zinc chloride having a specific gravity of 1.67 at 20° C. should be prepared, this solution has a viscosity at 20° C. of 9.5 centipoises. Using this solution as the solvent, a 2.5 per cent (weight/volume) solution of silk is made up, using the weight of silk at standard regain; that is, 2.50 grams of silk at standard regain is placed in a flask and 100 cc. of zinc chloride solution is added. The flask is stoppered and is placed in an oven at 45° C. for 3 hours to dissolve the silk. The flask is then cooled in water to 20° C. and the contents are placed in the viscometer; the time of flow at 20° C. is noted for the silk solution and for the zinc chloride without the silk. Since the addition of the silk does not materially alter the density of the solvent, the viscosity of the silk solution is equal to:

$$V = 9.5\ T/t$$

where V = viscosity of the silk solution in centipoises
T = time of flow of the silk solution at 20° C.
t = time of flow of the zinc chloride solution with no silk dissolved, at 20° C.

Mechanical damage does not affect the viscosity of the silk but chemical damage will decrease it. The test may be carried out on dyed material and may also be carried out on weighted silk if the weighting is first removed by the procedure given in Chapter 10.

Undamaged silk will give viscosities of 19 to 24 centipoises; damaged silk will give values less than 19 centipoises, complete disintegration of the silk corresponds to 10-12 centipoises.

In carrying out this test, it is essential that the specific gravity of the zinc chloride solution be 1.67, a solution of 1.62 specific gravity will not dissolve the silk.

REFERENCES

(1) Trotman, S. R. and Bell, H. S. Determination of Damage in Silk. Journal of the Society of Chemical Industry *54*, 141T (1935).

(2) Trotman, S. R. Determination of Damage in Silk. Journal of the Society of Chemical Industry *55*, 325T (1936).

(3) Tweedie, A. S. Study of the Viscosity Method for the Determination of Damage in Silk. Canadian Journal of Research *16B*, 134 (1938).

(To be continued)

When Rayon Was Artificial Silk

NOEL D. WHITE

THIS may be just a lot of water over the dam, but it is by learning from the trials and tribulations of pioneers, about their mistakes and how they solved their problems that progress is achieved. In textiles as well as in other lines of endeavor the way to success is by profiting from the mistakes of others. The remarkable progress made by the rayon manufacturers in the comparatively few years of their existence is due in large measure to this fact. Since it was my lot to have ventured in rayon dyeing when these fibers first made their appearance in the field of textiles some of my experiences may be of interest.

The manager of the mill had called me into his office. He handed me a bunch of hosiery he had been inspecting. "I believe that dyeing artificial silk is not in your line."

With the evidence in my hand I had to admit it was a poor job of dyeing. The yarn in this hosiery was a mixture of silk, rayon and mercerized cotton. The leg was knitted with a thread of silk and rayon twisted together, the heel, top and toe were of mercerized cotton. The rayon in this mixture had dyed considerably lighter than the silk and could be seen grinning through the fabric in shining specks, presenting a mottled, heathery appearance.

"I am sorry," I said, "but I can't do any better on that hosiery. You have in it the wrong kind of artificial silk and I already told you there are no dyes to be had which will dye a good union on those three fibers."

When this mill decided to add to their stock a low priced hosiery, to supplement their line of silk and mercerized ladies' hosiery, they took the advice of a salesman who evidently did not know the nature of the different rayons in regard to their relation to other fibers and their affinity for dyestuffs. When the first bunch of hosiery knitted with these three fibers was brought to the dyehouse it was my first intimation that I was to dye a mixture

containing rayon and naturally I supposed they had bought the right rayon for the purpose. It had never occurred to me to question their judgment.

The bunch contained four dozen pairs of hosiery and my order was to divide it and dye four of our current shades out of it, which I did, putting a dozen of each into a machine along with 100 pounds of our regular goods. These sample trials, dyed with a regular batch came out quite satisfactorily, and viewing the result I was gratified to see that the union was not bad. When a regular lot was finally sent to be dyed the formula for dyeing three fiber hosiery had to be modified and right away I knew we had trouble on our hands. The silk was dyed correctly, the cotton had come out darker, but the rayon was not dyed at all. In a case like this, with our regular goods, the procedure was to add a little acetic acid to the bath and give it a boiling, which would have reduced the color on the cotton, but in this case, when the rayon had no color on it, presented a problem I had not anticipated. Stopping operation on the lot I took a few stockings out and began experimenting in a beaker in the laboratory. I worked at it until my bag of tricks was exhausted, then decided to find out what kind of rayon they had used in that mixture.

The superintendent assured me he had nothing to do with buying that rayon and if anything was wrong with it I had better take it up with the manager. When I inquired of this man I was informed that on good authority he had bought a certain brand of artificial silk, that being the best rayon made. . . . I told him that was a big mistake; that this particular product was a good artificial silk when it was dyed alone, but not the best for dyeing in a mixture. I told him what I knew about the making, properties and affinities of that artificial silk and the effect obtained when dyeing it with other fibers in solid shades, but he said that since they had bought it I should go ahead and do the best I could with it. Which I did, with the result that he finally told me what he thought of my ability to dye rayon.

Of course I did not mind it. Knowing that if I could not do any better with this mixture other dyers had no better possibilities at that time. So I suggested to the manager he should send some of the hosiery containing this mixture to a reliable commission dyer and see what results he would have with it. This he did and in the end decided to put viscose rayon in the hosiery and everything turned serene again.

FIRST DYERS OF ARTIFICIAL SILK

The first rayon which came to my attention was by no means the product we know today. That is to say it had not reached the state of perfection it has attained at the present time. It was a coarse fiber in structure and uneven in size, the thread running round and flat in places, which made it almost impossible to dye it evenly.

Very few people took the artificial fiber seriously at that time, but owing to its high luster and its tensile strength when dry, it was found admirably adaptable for embroidery work, decoration for other fibers, for trimming in millinery, making braidings and many other articles where it could replace the more costly silk to advantage. Then other kinds of artificial silks (as they were called) made their appearance, but few took kindly to any of them. The dyers did not believe there was any future to them. Not being acquainted with them and finding it hard to process, many refused to dye the new product. Also most of the users only had a limited amount of the yarn and wanted it dyed in small lots of many colors. Many dyehouses simply refused to enter the field of dyeing artificial silk. They did not want to bother with a line they did not believe in.

In this contingency many outsiders stepped into the breach and an army of new dyers came into existence who knew little about dyeing, but were willing to learn how to dye these artificial yarns. The dyestuff distributors were ever ready to help these new comers with advice, giving formulas, selling dyes, chemicals and services to anyone who was willing and enterprising enough to tackle the new products. Lots to be dyed were generally quite small, sometimes only a skein or two to a color and many found a comfortable living starting up a dyehouse in the corner of the kitchen, the only requirement being a gas-jet and a couple of stew-pans. Some garment factories even had a dyehouse of their own, set up in a vacant spot.

Since the main objection to dyeing artificial silk was the lack of elasticity when wet, which caused many breaks, making it hard to wind and causing a lot of waste, it was important that the work be done in the shortest time and few motions. No scouring or preliminary treatment was deemed necessary. The yarn was put on rods, given a turn or two in warm water to wet it and then dyed to a semblance of a match. It was difficult to obtain a level shade, and if a lot was returned to the dyehouse as unsatisfactory it was redyed black and the dyer lost the price of one dyeing. Dissatisfaction was general and something had to be done about it. Is it any wonder the regular dyehouses were loath to add the new product to their business?

At this time a group of manufacturers in the East, who believed in the future of the artificial fibers, disgruntled by the treatment they were getting from the commission dyers decided to combine forces and raised enough capital to start a dyehouse for the artificial silk they wanted to use. They were convinced that poor results were inexcusable. The matter was to be treated in a scientific way to get results. Accordingly they engaged the best chemists and dyers they could find who were willing to take a chance with them. They gave them the opportunity to investigate and find a way to get the best results possible in dyeing the new fiber. In a short time this combine succeeded so well that in less than a year they were supplying not only their own needs, but serving a large outside trade as well with satisfactorily dyed artificial yarns.

A BACKWARD LOOK ON PROCESSING THE RAYONS

In a few years it became quite evident that artificial silk, which by this time had taken the name of rayon, was destined to become a large factor in the textile industry, far larger than the most optimistic had anticipated. Dyehouse owners began to take rayon to dye as a regular business, realizing it was either that or retirement from the field and the stew-pot dyer faded out of the picture. What brought about this, however, was the greatly improved product manufactured. The thread in all rayons is more uniform, making it easier to dye; the tensile strength even when wet is greater than the rayon known years ago, when if a handful was kept in the dyebath too long the skein would fall apart. Also the homogeneous texture of the fibers of today insures even, level colors whether dyed in skeins or knitted and woven into fabrics.

However, the methods of dyeing any of the rayons and the use to which each kind is best suited depends even today on the process of manufacturing it. Rayon which is made by the nitro-cellulose process has a good affinity for basic dyes, and like silk can be dyed with them without any of the previous treatments which are necessary for dyeing cotton. But many of the direct colors which are commonly used in dyeing silk and mercerized cotton dye very poorly on nitro-cellulose rayon, as the manager mentioned at the beginning of this writing had to find out at his expense.

The next rayon to appear in the field was that made by the cuprammonium process and it was claimed to be stronger, softer and of more even texture than the real silk, but its reception was not immediately enthusiastic. We were still struggling too hard with one artificial fiber to take kindly to another one. About this time while visiting a dyer in his place of business he handed me a skein of yarn and said: "What do you think of this horsehair?" I had handled horsehair in bunches, bleached and dyed it, but had never seen it in skeins. This looked like the real stuff, but being in a continuous thread had me puzzled. "What is it?" I asked. "This is artificial horsehair," he answered. "If it can be drawn as fine as the artificial silk we have now, it will supplant all other kinds, including real silk." And that prophecy made in 1904 came very near becoming a reality for from that horsehair beginning the rayon made by the viscose process has been evolved, which can be dyed in any mixture as easily as mercerized cotton. The constantly improved methods of manufacturing has increased its popularity and encouraged the manufacture of the other rayons as well and are now more uniformly perfect than any of the natural fibers.

In 1919 a chemist in the laboratory of a dyestuff concern, where I used to take my troubles and problems to solve, gave me a spool of a lustrous, white yarn. He told me it could be obtained in any color and could be used in place of resisted yarn and cross-dyed with silk, wool or cotton, for no known dyestuff had any effect on this new yarn, yet it contained no resist of any kind. That was my first introduction to Lustron, one of the first rayons made by the acetate process. Having had some of it knitted into our silk hosiery to test it, results were quite disappointing until we learned two things: First—degumming the hosiery at the boil saponified the acetate fiber, increasing that rayon's affinity for the dyestuffs we used and becoming badly stained by them. Second—dyestuffs had to be selected very carefully, because many would stain the acetate even when saponification did not occur. Acetate rayon also has been greatly improved since our first experiments with it and is now easily dyed with the dyes suitable for it. Nevertheless those two things we learned at the start are still the most important factors for successfully dyeing it alone or in mixtures.

IMPORTANT POINTS IN RAYON DYEING

The inherent impurities covering the natural fibers are not present in any of the rayons and it has been the mistake of the pioneers in dyeing it to believe that since the artificial fibers contain no waxes, like cotton, no grease, like wool, and no gum, like silk, he could do away with boiling it off or scouring, saving time, expense and the fiber. The only preliminary operation was to wet the rayon in hot water and proceed to dye it with as few motions as possible. That was the reason so much grief was attached to rayon dyeing.

While it is true that the rayons are free from natural impurities, there are the lubricants, emulsions and finishes used by the manufacturers to facilitate the operations of skeining, winding or coning and to make it easier for the knitter, the warper or any who may use the finished rayon. These finishes are on the rayon, dried on it, sometimes oxidized on it, and are always a menace to perfect dyeing if not removed from the fibers before attempting to dye it. The manufacturers use the best they can find to improve the work and make it easier for the final user, however, for reasons over which the dyer has no control he does not find it always easy to remove these lubricants.

Mixing rayons of different manufacturers are found to dye differently in a batch. Rayons of different age have caused uneven batches when dyed together. Scouring in most cases will remedy that, but must be done as thoroughly as with any of the natural fibers. Carefully storing the rayon to protect it against dampness, dryness and the changes of temperature is absolutely necessary.

I was talking to a hosiery dyer one day while he was having troubles with uneven batches of rayon goods. He said: "You told me that best results are always obtained when the work is done with dispatch. Here is how I dyed this lot: I wetted the goods in a salt bath, added the colors, started dyeing at 140 F., heated the bath to 170 F. then boiled it and ran 30 minutes longer. No addition of dyes has been made, the formula is correct, yet see what I got!"

The color was a light tan and the batch had several shades in it. A very uneven piece of dyeing. I told him that if he had another lot that I would dye it for him. Here is what I did: I put the goods in the machine; filled it with

hot water and added two per cent of sulfonated castor oil and two per cent trisodium phosphate; ran the goods in it 20 minutes at 180 F. and then dumped the bath. In a new hot water bath with one per cent of the same oil I made him prepare the dyes from the same formula and add them bringing the bath to a boil. He ran the goods for 15 minutes and added 5 per cent salt and ran 15 minutes longer in the cooling bath. When he saw the result this man objected that I wasted half an hour in scouring. I said: "Maybe you prefer saving the time of scouring and then spend a whole day trying to make an uneven batch presentable!"

TRADE NOTES • NEW PRODUCTS

• GENERAL RELEASES

General Dyestuff Corp., 435 Hudson St., New York City, announces release of circulars describing the following products:

Dullit S—a new substantive delustering agent which is said to be fast to rinsing and to impart, not only an even matt effect, but also a very soft and full handle to the materials treated. It is particularly suitable for rayon and staple fiber materials but may also be used for silk. It is stated that the product is not sensitive to hard water and that it is not necessary to apply softening agents to the bath. Circular No. 1633.

Este Delustrant EK—a new delustrant for use on knitted or woven rayon material on the pad. It does not require any addition. The product is simply pasted up with warm water and applied at 85 to 95° F. It is stated that it produces a deep matt effect and an extremely soft, agreeable handle. Circular No. 1635.

Diazo Brilliant Scarlet ROL Extra—which is considerably clearer, yellower and stronger than General's "ROA Extra" brand, and has equal dischargeability. It is said to have considerably better washing, water and light fastness. Circular No. 1650.

• ROHM & HAAS FOLDERS

Rohm & Haas Co., Inc., 222 West Washington Square, Philadelphia, Pa., has released the first of a series of circulars describing their RHoplex resins. This series will present a discussion of the outstanding properties of these aqueous dispersions and suggestions for their application to textiles. Copies are available upon request.

• CIBA REVIEW

Copies of *Ciba Review*, No. 22, June, 1939, have recently been distributed. The theme of this issue is: "Crafts and the Zodiac." Articles carrying out this theme are described by the following titles: The World of Astrology; Man's Labor Through the Year; Craftsmen as Children of the Planets; Historical Gleanings; Scientific Notes. Also included with this issue is a supplement entitled "Paper Printing Colors."

• JOINS RODNEY HUNT

Rodney Hunt Machine Company of Orange, Mass., is pleased to announce that Mr. C. H. Reumann is now representing them in the South. Mr. Reumann, formerly with the Philadelphia Drying Machine Co., has an excellent understanding of textile wet finishing problems and his services should prove of value to the Southern finishing plants.

• PHILADELPHIA TEXTILE GRADUATION

The Philadelphia Textile School held its graduation exercises on the morning of June 8th in the west wing of the Museum of Art. The ceremonies marked the 55th year of the establishment of the two schools of the Philadelphia Museum of Art—the textile school and the art school.

Among the speakers were: Edward Warwick, principal of the Art School; Charles Child, well-known artist, and Edward W. France, director of the Textile School. Among the graduates in the regular chemistry, dyeing and printing course were: Isadore Berman, Charles K. Bishop, George J. Booth, Fritz F. Kobayashi, Jerome A. Lesser, Newton Monschein, Michael T. Pakyz, Robert F. Roecker, Harry J. Seibold, Sidney D. Siegel, Homer B. Wolfe.

• CHEMISTRY, WORLD'S FAIR

Foster Dee Snell spoke at the Chemical and Allied Industries luncheon of The New York Credit Men's Association held at the Aldine Club on June 8th on the subject "Chemistry at the World's Fair." He discussed the role of Chemistry not only in many exhibits but in the buildings themselves, lighting, etc. which points to the fact that chemistry will play an important part in the world of tomorrow.

CLASSIFIED

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $5.00 per column inch or less per insertion.

POSITION WANTED: Colorist, 11 years' laboratory experience. Thorough knowledge dye testing and matching. Capable of taking charge of laboratory. Age 30 years. Married. Will go anywhere. Write Box No. 188, American Dyestuff Reporter, 440 Fourth Ave., New York, N. Y.

WANTED: Silk Yarn Dyer. Must be experienced in fast color work on spun silk. Give full details as to age, experience and salary expected. All information will be kept confidential. Our organization knows of this advertisement. Write Box No. 190, American Dyestuff Reporter, 440 Fourth Ave., New York, N. Y.

POSITION WANTED: Young man, age 21 years, graduated in June having majored in Chemistry consisting of organic, inorganic, physical, qualitative analysis, seeks position where he can gain practical experience. Write Box No. 191, American Dyestuff Reporter, 440 Fourth Ave., New York, N. Y.

WANTED: Textile Chemist for laboratory work in textile chemical house. Must be familiar with analytical work and should have practical experience. Give full particulars. Write Box No. 192, American Dyestuff Reporter, 440 Fourth Ave., New York, N. Y.